

www.

FIG. I

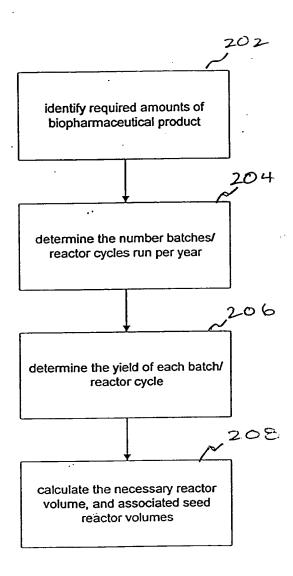


FIG. 2

Unit Operations List

Microbial Fermentation Process

			Cycles per	per												
don			5	Unop		Batch				Process	688		Recovery	2		
Sag			_	Offset	5	UnOp UnOp	۾	Offset	2	QuO	Ouo	Offset	Product	duct	Total	Total Protein
No.	Code	Unit Operation Type		(Hrs)	ß	Start End		(H73)		Start	Elig	(Hrs)	SWR	OAR	SWR	OAR
_	•	Inocilim Pres	-		က		9									
- ~	2		_		6	_	ဖ		_							
. 65	53		<u>-</u>	- <del>-</del>	ო	_	9		-			•	•			
4	e	3 Production Fermentation	Ψ.		ო	-	ဖ		-				100%	100%	100%	100%
9	51	Heat Exchange	-		က	<del>-</del>	ø		_				100%	400%	%00L	
9	28	Cont. Centrifugation/Whole Cell Harvest	-		၈	<del>-</del>	9		<del>-</del>				82%	82%	82%	
_	48	Resuspend Cell Paste	=		<del>-</del>				<del>.</del>				100%	82%	100%	
8	51		=		က	. 80	5		-				100%	82%	100%	
6	3		-		က	æ	5		-				80%	76%	%06 	
. 6	5	Heat Exchange	-		က	ω	유		-				100%	76%	100%	
=	48	Resuspension/Surfactant	_	_	8	<u>-</u>	72	_	-				100%	76%	82%	
7	29	29 Cont. Centrifugation/Precipitate Harvest	_		2	=	12	_	-			•	82%		32%	
. 5	48	Resuspension/Buffer	<b>-</b>		<del>-</del>				-				100%	72%	82%	
14	53	Ultrafiltration/Concentration/Dilution	Ψ-		<del></del>			-	-				82%		82%	
12	48	Microfiltration/Tangential	-		-				-				93%		82%	
\$	38		Ŧ		-				_				82%		33%	
11	g	Product Adsorption MPLC	Ŧ		=		_		<del>-</del>				%06		40%	
~	39	Ultrafiltration/Flow Dialysis	_		_		-		<del>-</del>				95%	46%	95%	
19		39 Product Adsorption MPLC	_		-				_				85%	38%	25%	5%
20	37	Ultrafiltration/Flow Dialysis	-		-				_				%06	35%	82%	%
2	39	Product Adsorption MPLC	<del>,</del>		<b>-</b>			-	<del>-</del>				% 6	32%	% 80 80	~
72	37	37 Microfiltration/Dead End	-		<del>-</del>		-		<del>-</del>				82%	30%	82%	~
23	66	End		-							•	_	7	(	•	•
(			7	7			-		$\exists$		7	$\frac{1}{1}$	$\frac{1}{2}$	}	4	1
,	-	_	ئى پ	, g	~~ ~~	ء بہ	m E	- c	ہ کی ر	350	; ــ	324	اً م	328	<u> </u>	337
200		707	ဗ္ဂ	و	र र	3	アラ	,	0		775	•	37%	)	330	

Unit Operations List

;<u>`</u>~

Mammalian Cell Culture Process

Code Unit Operation Type  4 Initial Seeding 5 Culture Vessel Split 5 Culture Vessel Split 6 Spliner Flask Split 13 Stirred Tank Reactor 61 Harvest/Feed 62 Harvest Pool 34 MF/Tangential Flow 35 UF/Concentration 39 PAC/MPLC 39 PAC/MPLC 30 UF/Concentration 31 UF/Concentration 32 UF/Concentration 33 UF/Concentration 34 UF/Concentration 35 UF/Concentration 36 UF/Concentration 37 UF/Flow Dlabysis 38 UF/Concentration 39 UF/Concentration 30 UF/Concentration 30 UF/Concentration 30 UF/Concentration 30 UF/Concentration 31 UF/Concentration 32 UF/Concentration 33 UF/Concentration	91	Batch Process Rec	set UnOp UnOp Offset UnOp UnOp Offset Product Start End (Hrs) Start End (Hrs) SWR OAR S	24 1 68 8 18 168 168 18 168 18 168 18 168 18 168 18 168 18 168 18 168 18 168 18 168 18 168 18 168 18 168 18 168 18 168 18 168 18 18 168 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 168 18 18 18 168 18 18 18 18 18 18 18 18 18 18 18 18 18	HZH ZZH OZH OID 71A HIR ZIT GIR
Cycles Control of the Cycles			set UnOp UnOp	24	THE CITY OF
	Cycles p	Oun		4 Initial Seeding 5 Culture Vessel Split 5 Culture Vessel Split 6 Spliner Flask Split 13 Stirred Tank Reactor 61 Harvest/Feed 62 Harvest Pool 34 MF/Tangential Flow 35 UF/Concentration 39 PAC/MPLC 37 UF/Flow Dialysis 39 PAC/MPLC 37 UF/Flow Dialysis 39 End	7 2 4 X 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4

FIG.

<del>-</del>

.2.....

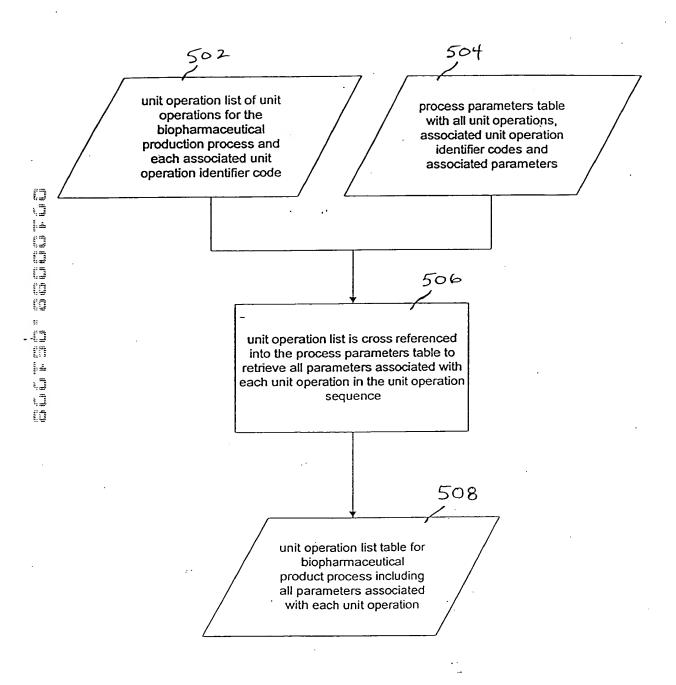


FIG. 5

-					<del></del>	<del></del>		1			<del> </del>		_	
	task duration	3, 3, 23, .3 Hrs	1, 1, 23, .3 Hrs	1, 1, 21, .5, 1, 1, 3 Hrs	•	•	•	•	•	•	•	•	•	
	tasks 🏉	setup, preincubation, Incubation, clean up	setup, preincubation, incubation, clean up	setup, preincubation, fermentation, harvest, CIP, SIP, clean up	setup preincubation, fermentation, CIP, SIP, cleanup	setup, transfer, CIP, SIP, cleanup	setup, centrifugation, wash, CIP, SIP, cleanup	setup, dilution, agitate, CIP, SIP, clean up	setup, lysis, CIP, SIP, clean up	setup, dliution, agitate, CIP, SIP, clean up	setup, centrifugation, wash, CIP, SIP, clean up	setup, flush, prime, concentration, dilution, wahs, flush, store, CIP, SIP, cleanup	•	
	solution type	\$-101	S-101	S-101, 102, 103, 104, 105	S-101, 102, 103, 104, 105	•	S-106	S-107	S-107	S-108	S-108	S-109	•	
	Parameters	# of flasks, volume of flasks, termperature, agitation, duration, final OD	scale up ratio, media volume, termperature, agitation, duration, final OD	scale up ratto, fermentor working volume, antifoam, base acid, grow temperature, agitation, sparge rate, back pressure, total duration	scale up ratio, germentor working volume, antifoam A, antifoam B, base, acid, grow termperature, agitation, sparge rate, back pressure, total duration, final OK, dry cell mass, product concentration, CIP, SIP	process initial & final temp; utility initial & final temp; process specific heat; design type, step recovery of product, step recovery of T.P., temperature regulation, CIP, SIP	system void volume, RCF, time, voulume reduction, wash volume, clean, rinse	reagent/product ratio, titration solution, resolublization, agitation, solution name, step recovery of the product, step recovery of T.P., termperature regulation, CIP, SIP	product temperature, unliity temperature, void volume, number of passes, pressure, flow rate, temperature increase, wash, rinse, step recovery of product, step recovery of T.P., temperature regulation, CIP	reagent product ratio, titration solution, dilution time, agitation, solution name, step recovery of T.P., temperature regulation, CIP, SIP	system void volume, RCF, time, volume reduction, wash volume, clean, rinse, step recovery of T.P., temperature regulation, CIP, SIP	reagent/product ratio, titration solution, resolubilization, agitation, solution name, step recovery of product, steop recovery to TP, temperature regulation, CIP, SIP		
	Unit operation type	Inoculum prep	flask growth	fermentation seed	fermentation production	heat exchange	batch centrifugation	resolublization resuspension	Cell Disruption High Press. Hommogenization	Dilute with Surfactant	batch centrifugation preciptate harvest	resuspend with chaotrope	•	•
	unit operation id code	-	2	m	4	ιΩ	ω .	7	ω	Б	10	11	•	

FIG. 6

::35%

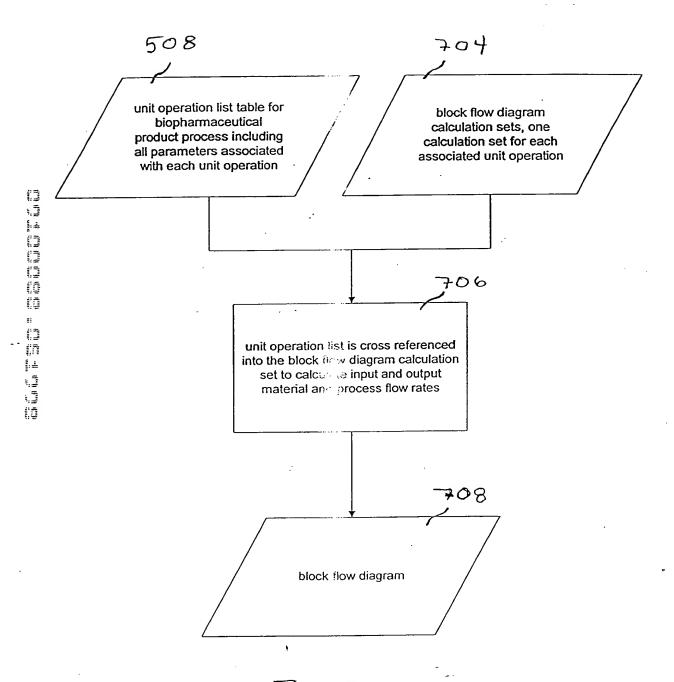
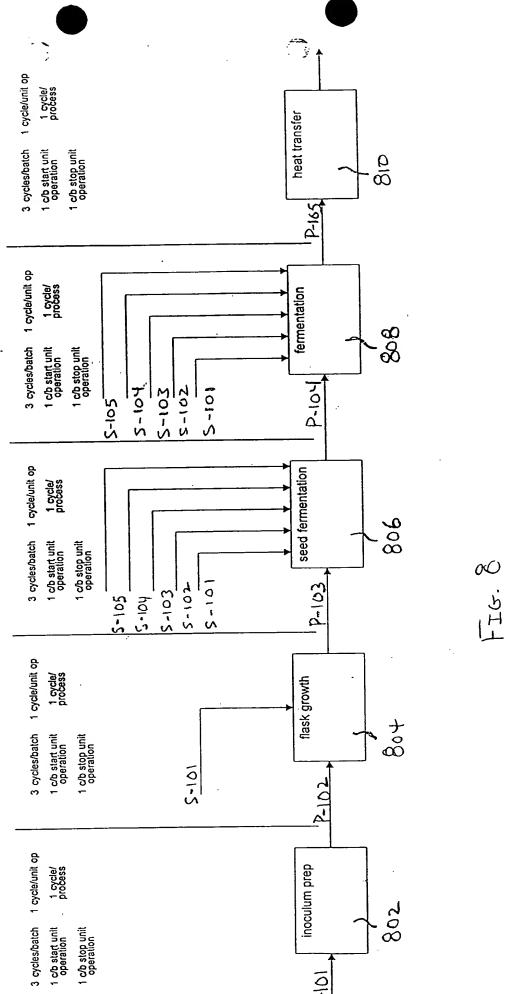


FIG. 7



Section 20

مرتمي

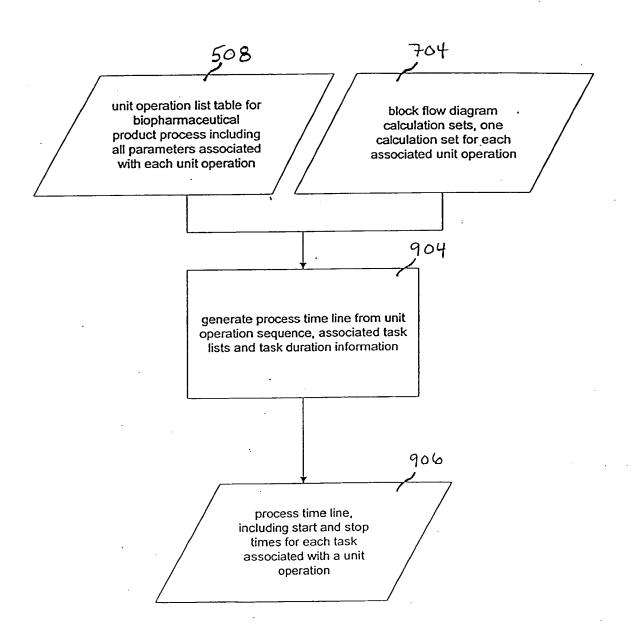


FIG. 9

Sample Application of Process Design Cycles In Process Scheduling

## **Microbial Fermentation Process (see unit operation list)**

First Process Cycle

Day

Second Process Cycle

Duration

Week

Week

Day

Note: None of the unit operations in this process have more that 1 cycle per unit operation (see unit operation 8 in the mammalian cell culture process for an example of multiple cycles per unit operation)

Unit Operations 1-6 undergo three repetative cycles per batch as a set before continuing with unit op 7
This translates to three runs on a fermenter with each harvest (unit op 5 & 6) being stored for pooling at unit op 7
Associated with each fermenter run (unit op 4) are the previous steps for innoculation prep (unit ops 1-3)

	1/3 fermants	tion cycles per batch					
يد دو پوء	1	Inoculum Prep	24 hrs	1	Fri - Sat	2	Fri - Sat
13	2	Flask Growth	24 hrs	2	Sat • Sun	3	Sat - Sun
ŧ. 🗖	3	Seed Fermentation	24 hrs	2	Sun - Mon	3	Sun - Mon
4	4	Production Fermentation	24 hrs	2	Mon - Tue	3	Mon - Tue
IJ	5	Heat Exchange	1 hr	2 '	Tue	. 3	Tue
13	6	Centrifugation	1hr	2	Tue	3	Tue
() ()	2/3 formenta	tion cycles per batch					
(Q	1	Inoculum Prep	24 hrs	2 :	Sun - Mon	3	Sun - Mon
í.o	2	Flask Growth	24 hrs	2 1	Mon - Tue	3	Mon - Tue
<del>-</del>	3	Seed Fermentation	24 hrs	2 7	Tue - Wed	3	Tue - Wed
	4	Production Fermentation	24 hrs	2 1	Ned - Thu	3	Wed - Thu
Ü	5	Heat Exchange	1 hr	2 7	Thu		Thu
n	6	Contribugation	1hr	2 1	Thu	3	Thu
14. 1	3/3 fermental	tion cycles per batch					
*, <u>⊶</u>	1	Inoculum Prep	24 hrs	2 1	rue - Wed	3	Tue - Wed
ij	2	Flask Growth	24 hrs	2 \	Ved - Thu	3	Wed - Thu
	3	Seed Fermentation	24 hrs	2 1	Thu - Fri	3	Thu - Fri
=	4	Production Fermentation	24 hrs	2 F	ri - Set	3	Fri - Sat
	5	Heat Exchange	1 hr	2 8	Sat	3	Sat
	6	Centrifugation	1hr	2 8	Set	3	Sat
		. 1. 11. 1	6				

Unit Operation 7 pools the harveste from the three fermentation cycles above

7 Pool Harvests

3 hr

3 Mon

4 Mon

Unit Operations 8-9 undergo three repetative cycles per batch as set before continuing with unit operation 11
This translates to three consecutive passes through cell disruptor (unit op 9) with its associated heat exchangers (unit op 8 & 10) at the inlet and the outlet of the cell disruptor

1/3 disruptio	on cycles per batch			
. 8	Heat Exchange		,	
9	Cell Disruption		•	
10	Heat Exchange	0.5 hr	3 Mon	4 Mon
2/3 disruptio	on cycles per batch			
8	Heat Exchange			
9	Cell Disruption			
10	Heat Exchange	0.5 hr	3 Mon	4 Mon
3/3 disruptio	n cycles per batch			
8	Heat Exchange			,
. 9	Cell Disruption			
10	Heat Exchange	0.5 hr	3 Mon	4 Mon

FIG. 10

## Sample Application of Process Design Cycles in Process Scheduling

First Process Cycle

Second Process Cycle

## Icrobial Fermentation Process (see unit operation list)

			Duration	Week	Day	Week	Day
ranst	ates to t	lergo two repetative cycles p wo cycles of resuspending to encentrating the insoluble p	the cell lysate fro	om the cell o	disruptor in a m	mit op 13 niki	
% pr	oduct w	ashing cylons per batch					
•	11	Resuspension	0.5 hr	3	Mon	•	Mon
	12	Centrifugation	1 hr	3	Mon	4	Mon
7/3¢	oroduct v	washing cylces per batch			•		
	11	Resuspension	0.5 hr	3	Mon		Мол
	12	Centrifugation	1 hr	3	Mon	4	Mon
ps 13	3-22 und	ergo only one cylca per unit	t operation each	to the end	of the process		
	13	Resuspension	0,5 hr		Mon		Mon
	14	Buffer Exchange	2 hr	-	Моп		Mon
	15	Filtratration	2 hr	_	Mon	-	Моп
	16	Liquid Chromatography	16 hrs	. 3	Mon - Tue	•	Mon - Tue
	17	Liquid Chromatography	4 hrs	3	Tue		Tue
	18	Buffer Exchange	2 hrs	3	Tue		Tue
	19	Liquid Chromatography	2 hrs	` 3	Wed		Wed
	20	Buffer Exchange	2 hrs	3	Wed		Wed
	21	Liquid Chromatography	2 hrs	3	Wed		Wed
	22	Filtratration	2 hrs	3	Wed	4	Wed

FIG. 11

£ · £ £ £ £ 8 0.50 0.10 Calculation Š ž 355 ~ 4.2 C. 9.4 662.1 L@ 7 7 7 8 8 8 20.00 80.0 09:00 AM 10:00 AM 10:05 AM 10:21 AM 11:21 AM 08:10 AM 08:00 AM 10:00 AM 11:00 AM 01:00 PM 12:30 PM 01:30 PM 10:30 PM 11:30 AM 12:30 PM 03:30 PM 11:00 AM 11:00 AM 08:00 AM 10:00 AM 12:00 PM 1220 PM 0320 PM 0220 PM 0245 PM 0120 PM 0220 PM 0120 PM 888 288 2 Ü -08/05/98 08/05/98 08/06/98 08/06/98 08/06/98 06/05/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/03/96 06/03/96 06/04/96 06/04/96 08/04/96 08/04/96 08/05/96 DARG. 12:30 PM 01:30 PM 02:30 PM 01:30 PM 09:00 AW 10:00 AW 11:00 AW 08:00 AW 09:00 AW 08:00 AM 08:00 AM 08:00 AM 10:00 AM 09:00 AM 10:00 AM 10:06 AM 10:21 AM 01:30 PM 02:30 PM 09:30 AM 12:30 PM 03:30 PM 02:30 PM 11:30 AM 12:30 PM 01:30 PM 10:30 AM 11:30 AM 12:30 PM Ţ, - WE 06/07/96 06/07/96 06/07/96 06/07/96 06/02/96 06/02/96 06/02/96 06/04/96 06/04/96 06/04/96 06/04/96 06/05/96 08/05/98 08/05/98 08/05/96 08/06/96 08/06/96 08/06/96 06/06/96 06/06/96 06/07/96 06/07/96 06/07/08 06/07/08 06/07/08 06/07/08 1 9 1.85 1.85 2.58 2.57 22443333 333333 99333 333353 Abs. Days <u>88</u>20 3 5 8 8 5 8 8 222222 823333 44444 884444 3 8 8 8 S Compil 38.8 83.5 84.5 87.5 08.0 08.0 00.00 106.4 107.4 107.9 Ref. Time Scale (Hrs) Erec. 61.5 32.5 108.0 9.0 0.0 1.08 55. E. ê 37.5 38.5 60.5 81.5 82.0 83.0 104.5 105.0 도로도 되도 운 운 운 문 문 £ £ £ £ £ £ £ 문 문 문 문 문 된 문 £ £ £ £ £ £ £ £ £ £ £ £ £ . 2 2 2 2 2 5 5 5 5 5 5558558 222222 225533 552555 TIVESS HIND LINE Duration (Hrs.) 222223 <u>हड़</u> / 3333 2000 88888 . 00000 ş 20000 2222 222222 8 5 5 5 5 8 3.85 3.85 3.85 3.85 3.85 Set Up
Preincubation
Incubation
Clean Up
Subtotat Set Up
Preincubation
Incubation
Clean Up
Subtotal Set Up Preincubation Fermentation Harvest CIP SIP SIP CERN Up Set Up
Preincubation
Fermentation
CIP
SIP
Clean Up
Subtotal Set Up
Centrifugation
Wash
CIP
SIP
Clean Up Set Up
Transfer
CIP
SIP
Clean Up 

\$\$\frac{1}{2}\$: :

Levis This

		Proces	Process Time Line	Úne					$\dashv$								
		Durado	Duration (Mrs.)		Rel. Tin	Rel. Time Scale (Hrs)		Abs: Days:	-	8:	Jung gren, gine		100 AC 100M				
_	Operation	<u>2</u>	ş	Adi.	Preo	200	l	Shrt E	-		_	Date	11- 16-19 16-1 17-0		Calculations	į	
Ļ						15.5	7-	_	╁	BOVES	08:00 AM	Ι	1				
88	Incubation Clean Up	23.0	88	23.0 Hrs		38.5	8	8 8	8:	96/03/96	M4 05:00	807080	02:30 PM				
8 2	Subtotal	25.0		25.0 Hrs	Γ	38.5		$\vdash$	_								
2 2	2 B Flask Growth					-		$\vdash$	T								
3:	Set Up	2.	8	1.0 F.	37.5			1,52	38		12:30 PM	9670/90	01:30 PM				
2 2 5	remodernen fraubation	2 8 2	3 3 3	2 2 2 2	9	61.5	:	8 8	3 2 5		25.30 PM	96,5590	2000				
5 6	Subtotal	25.0	3	25.0 Hrs	T	61.5		§ -		PACCORD.	W. 05.10	RACTION	Md 6810				
8 S	3 B Seed Fermentation		$\top$		$\top$	$\dagger$	1	†	T	1			1				
2 :	41114		3		9			- ;	-	_			. 1				
<b>= E</b>	Preincubation	2 2	3 8	5.5 E 2.	5.5			25.25	7 2 2		12.30 PM	98/50/90	0.25 0.25 0.20 0.20 0.20 0.20 0.20 0.20			•	
R	Fermentation	2.0	0.0	21.0 Hrs		82.5		2.58	ž		01:30 PM	06/06/96	10:30 AM	•			
Z #	Harvest	5 5	0 0	0.5 E H			2,0	3 3	9 :		1030 A	96796796	# S S S S S S S S S S S S S S S S S S S	50.0 L	1.7 LPM	•	0.50 Hrs
2	ds :	2	9	Ę.			3	5	ä	8000	138 ₹	96090	12.30 PM				
<u> </u>	Clean Up Subtotal	S 5	<u> </u>	3.0 Hrs	T	83.0	27.5	3.52	28	_1_	12:30 PM	96/06/96	03:30 PM				
۾ :						}											
8 2	4 B Production Fermentation									Ė							
2 :	Set Up	2.5	000	1.0 Hrs	82.0			3.38	3,42	96/90/90	09:00 AM						
3 2	Fermentation	2 5	38	21.0 Hrs	3	20.0		7 8	<b>3 3</b>	96/96/96	11:00 AM				•		
2 2	8 8	2.5	8 8	£ 5			105.0	3	3	06/07/08	08:00 AM	96/17/96	09:00 AM				
6	Clean Up	2	8	2.0 Hrs			5 5 5	3 23	3	98/10/90	10:00 AM						
88	Subtotal	27.0		27.0 Hrs		<u>8</u>											
8 8	6 B Heat Exchange							T	Γ			-					
22 5	Set Up	0.50		0.5 Hrs	26.5			नु	8,3	96/27/99	DB:00 AM						
2 Z	Cip	3 2		5. C.		105.0	108.0	33	3 2	06/07/06	08:00 AM			562.1 L@	9.4 LPM	•	5.8 F
2 2	SIP Clean Up	5.5	000	1.0 Hrs			109.0	777	4. 4 6. 2	06/07/96	10:00 AM	96/70/96	11:00 AM				
58	Subtotal	9.0	ļ.	5.0 Hrs		105.0						•	1				
8 5	6 B Cont Cent/Solids							T	T								
<u>\$</u>	Set Up	8.8		1.0 Ha	105.0	2		3	£, 4	08/07/96	08:00 AM		_	. :			:
3 8	Wash	3 5		2.0		3 8		3 3	? ?	06/07/98	19:00 AM			562.		• •	8.5
3	g (	0.25		0.5 Hr			108.4	4.	\$	06/07/96	10:06 AM			20.0 1 69	2 C.		0.25 Hrs
5 5	Clean Up	- 6 8 8	000	0.0 E.H. 5.0			107.9	9 5	2 9	06/07/96	1021 AM	08/07/96	1121				
5 5	Sub Total	3,85	<u> </u>	3.85 Mrs		<u>2</u>			Γ			. I	1				
2	1 C Inoculum Prop					T											
Ξ;	Set Up	0.5		1.0 Hr	14.5	•		8 8	8	98/20/90	01:30 PM						
==	Incubation	23.0	38	23.0 Hrs		38.5		2 8	8	96/0790	00:30 PM	9670798 06704786	02.30 PR				
<del>;</del> ;	Clean Up	S	- 1	0.3 Hrs		1	38.8	2	=	86/2/38	02:30 PM						
= =				60. V.C.		200											
J																	

			_	Т	_					ı —						_		_	_					Т	7					т		_					1	_		_	_				_
														0.50 H/3													8							0.10 Hrs							0.50 Ha.				
		<b>3</b> 0												•													•				1				•						•				
		Calculations											17 1 DM	E .													9.4 LPM							0.2 LPM						101	5				
													9	3							•					÷	562.1 L@						562.1		20.0					6 7 7 8	É				
1		ī			04-20 PM	02:30 PM	S	OT:45 PM		-	12:30 PM	S. S.	10:30 AM	120 41	120 PH	8330 PM						MY 00:00					99:00 AM		11:00 AM						1021 AW				40-06-411	10.38 AM	11.38 AM	1238 PM	2 2 2	E	T
Floigh		Date II					26/20/20	1			06/05/96		Devocase			98/90/90						08/0/08		•			06/07/96			,					06/07/96								06/07/96		
			MA 00:80			01:30 PM	MY 0620	EL 00:10			11:30 AM	W 000	10:30 AM	10:30 AM	11:30 AM	12:30 PM						00.00 AV		ł			86.80 AM						8:80 AM	10:00 AM	10:08 AM 10:21 AM	11:21 AM							12:38 PM		
Start		Date	96/20/90				267020				06/02/96	08/07/80	080000	96/90/90	06/06/96	96/90/96			96/90/90	98/90/90	96/06/36	06/07/08	06/07/96		$\prod$	***************************************	96/10/90	08/07/98	06/07/06			948490	06/17/90	06/07/96	06/07/86	08/07/98			ORMZIGA	08/07/98	06/07/96	06/07/96	06/07/98		
						8.5		.!							S.				342	378	3	35	4.50				3						4.42	7.	35	4.49			4.42	3	4.	3.	6.5		1
Abs. Days	֓֞֞֝֞֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	ä			3.	8.5		_			2.48	4 5	3 3		3				328	3.42		3 5					ş					;	3	4.42	33	4.47			4.38	5.42	_		3 5	l	
Rel. Time Scale (Hrs)		Comp					8.5							83.5	2,5	2					404	8 8	108.0					108.0	5.60					,	107.4	107.9				-		108.6	109.6		
E SC		Erec	15.5			8.5	?	61.5					83.0			83.0					5			<u>\$</u>			105.0			105.0			108.0	8.			106.1	T		106.6	107.6			107.6	1
Rat. T		g E			37.5	8. S.				- :	60.5	3							82.0	83.0						5						105.0							18						1
• 17		Adj.			1.0 Hz	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0.3 F	25.0 Hrs		:		21.0 H3	0.5 H	1.0 Hrs	라.	28.5 Hrs			.0. F	2.0 E. 10	5.0 E E	. F	2.0 Hrs	27.0 Hrs		0.5 Ha	1.0 Hrs	5 5 5 5	2.0 Hrs	5.0 Mrs		10 H	1.0 Hrs	9.4 F. F.	5.5 E #	0.5 Hrs	3.85 Hrs		1.0 Hrs	0.5 Hrs	1.0 Hrs	5. C	5 5 5 5 5 5	5.60 Hrs	
Duration (Mrs.)	Γ	इ	1		00	0 0	8		T	;	3 6	2 0	8	8	86	3	T					8		_	T	0	0	9 6	S		T	0.0	8	88	9 9			╁	9	9	9	9 6	38	-	十
Durate		빌			9	2 0	S	25.0	T	,	9 9	210	0.5	2	2.5	385	T		2	2	9	2	ន	27.0	T	0.50	8	2 0	20	5.0	T	-8	8	0.0	8	0.50	3.83	T	8	9.0	8 8	8 8	3 8	5.50	十
		Operation	2 C Flask Growth	•	Set Up		Clean Up		3 C Soed Fermentation					СБ		Subtotal	4 C Production Fermantation		Set Up		CIP		Clean Up	Subjois	6 C Heat Exchange	Set Up	Transfor	. also	Clean Up	Subtotal	6 C Cont Cent/Solids	Set Up	Centrifugation		ds	Clean Up	Sub Total	7 A Resolubilization	Set Up	Ollution	Agitate	3 8	Clean Up	Subtotal	8 A Heat Exchange
	ea		#	‡	2 5	2 2	쥰	<u> </u>	\$	124	2 2	121	128	\$	\$ 5	# 5	3	138	2 5	? 5	\$	₹		_ `	<u>3</u>	\$ \$	\$ :	3 3	160	<del>2</del> 25	<u> </u>	<u> </u>	\$ 1	158	2	9	<u> </u>	₫;	<u> </u>	166	\$ \$	9	\$	EE	E
	É	9																					8	3																				(	, <u>,                                   </u>

	•	
,		7
•	:	,
(	<u> </u>	1
	•	
	:	ď
		h
(	F	7
L	_	_

4.65 4.45 COUTING 1159.AM COUTING 1259.AM COUT
4.50 GG07766 11:54 AM G
4.50 00007706 11:39 AM 0007706 11:34 AM 4.52 0007706 11:34 AM 0007706 11:32 PM 0007706 11:31 PM 0007706 11:3
455 0607766 11:39 AM 0607776 11:54 AM 06.5 L@ 1.6 LPM - 452 0607766 12:34 PM 0607776 12:34 PM 06.5 L@ 3.6 LPM - 452 0607766 12:34 PM 0607776 12:34 PM 06.5 L@ 3.6 LPM - 452 0607766 12:34 PM 0607776 12:34 PM 06.5 L@ 3.6 LPM - 452 0607766 12:34 PM 060776 12:34 PM 06.5 L@ 3.6 LPM - 453 0607766 12:32 PM 0607766 12:34 PM 06.5 L@ 3.7 LPM - 454 0607776 12:32 PM 0607766 12:34 PM 06.5 L@ 3.7 LPM - 455 0607766 12:32 PM 0607766 12:34 PM 06.5 L@ 3.7 LPM - 455 0607766 12:32 PM 0607766 12:34 PM 06.5 L@ 3.7 LPM - 456 0607766 12:32 PM 0607766 12:34 PM 06.5 L@ 3.7 LPM - 458 0607766 12:32 PM 0607766 12:34 PM 06.5 L@ 3.7 LPM - 455 0607766 12:32 PM 0607766 12:34 PM 06.5 L@ 3.7 LPM - 456 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.7 LPM - 456 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.7 LPM - 457 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 L@ 3.5 LPM - 458 0607766 12:34 PM 0607766 12:34 PM 06.5 LPM 0607766 12:34 PM 06
422 0607766 1134 AM 060776 1134 AM 46.5 L
422 0607766 1224 PM 0607766 1224 PM 1625 PM 1224 PM 0607766 12
4.52 0607766 1224 PM 0607766 1224 PM 4.52 0607766 1224 PM 4.52 0607766 1224 PM 0607766 1224 PM 6.50 L@ 3.8 LPM - 4.54 0607766 1222 PM 0607766 1223 PM 0607766 1223 PM 0607766 1221 PM 0607766
4.55 0607786 1252 PM 0607786 1223 PM 65.0 L@ 3.8 LPM - 4.54 0607786 1252 PM 0607786 1222 PM 65.0 L@ 3.8 LPM - 4.54 0607786 1252 PM 0607786 1252 PM 65.5 L@ 3.7 LPM - 4.55 0607786 1252 PM 0607786 1252 PM 65.5 L@ 3.7 LPM - 4.55 0607786 1252 PM 0607786 1252 PM 65.5 L@ 3.7 LPM - 4.55 0607786 1252 PM 0607786 10150 PM 65.5 L@ 3.7 LPM - 4.55 0607786 10110 PM 0607786 10151 PM 65.5 L@ 3.5 LPM - 4.55 0607786 10110 PM 0607786 10151 PM 65.5 L@ 3.5 LPM - 4.56 0607786 10151 PM 0607786 10151 PM 65.5 L@ 3.5 LPM - 4.58 0607786 10151 PM 0607786 10151 PM 65.5 L@ 3.5 LPM - 4.58 0607786 1021 PM 0607786 10259 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 10259 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1022 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1025 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1025 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1025 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1025 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1025 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1025 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1025 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.59 0607786 1025 PM 0607786 1025 PM 65.5 L@ 3.5 LPM - 4.50 0607786 1025 PM 0607786 1025 PM
4.52 0607786 1223 PM 0607786 1223 PM 65.0 L
4.54 0607786 1224 PM 060786 1223 PM 69.0 L@ 3.8 LPM - 4.54 0607786 1223 PM 0607786 1223 PM 69.0 L@ 3.8 LPM - 4.54 0607786 1223 PM 0607786 1223 PM 64.5 L@ 3.7 LPM - 4.55 0607786 1223 PM 06077
4.54 06007766 12:22 PM 0607766 12:22 PM 10:20 PM
4.54 06007786 12:52 PM 0600786 12:52 PM 4.54 06007786 12:52 PM 0600786 12:52 PM 4.55 06007786 12:52 PM 0600786 12:52 PM 4.55 06007786 12:52 PM 0600786 12:52 PM 4.55 06007786 12:52 PM 0600786 11:10 PM 4.55 06007786 11:10 PM 06007786 11:10 PM 4.55 06007786 11:10 PM 06007786 11:10 PM 4.55 06007786 11:10 PM 06007786 11:10 PM 4.55 06007786 11:11 PM 06007786 11:11 PM 4.56 06007786 11:11 PM 06007786 11:11 PM 4.58 06007786 11:11 PM 06007786 11:11 PM 4.59 06007786 11:11 PM 06007786 11:11 PM 4.50 06007786 11:11 P
4.54 GOUTING 12:52 PM GOUTING 11:10 PM G
4.54 GGGT7786 12:52 PM GGGT786 12:52 PM GG.5 L.G. 3.7 LPM 4.55 GGGT786 11:10 PM GG.5 L.G. 3.7 LPM 4.55 GGGT786 01:10 PM GG.5 L.G. 3.7 LPM 6.51 GGGT786 01:10 PM GG.5 L.G. 3.7 LPM 6.51 GGGT786 01:10 PM GG.5 L.G. 3.7 LPM 6.52 GGGT786 01:10 PM GG.5 L.G. 3.7 LPM 6.52 GGGT786 01:10 PM GG.5 L.G. 3.7 LPM 6.52 GGGT786 01:10 PM GG.5 L.G. 3.1 LPM 6.52 GGGT786 01:10 PM GG.5 L.G. 3.1 LPM 6.52 GGGT786 01:10 PM GG.5 L.G. 3.1 LPM 6.52 GGGT786 01:21 PM GGGT786 01:21 PM GGGT786 01:21 PM GGGT786 01:21 PM GGGT786 GGG9 PM GGGT786 GGGG9 PM GGGT786 GGG9 PM GGGT786 GGGG9 PM GGGT786 GGGGG9 PM GGGT786 GGGG9 PM GGGT786 GGGG9 PM GGGT786 GGGG9 PM GGGT786 GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG
4.54 06007786 12:52 PM 0607786 01:10 PM 04.5 L@ 3.7 LPM 0607786 01:10 PM 0607786 01:11 PM 0607786 01:11 PM 0607786 01:15 PM 0607786 01:21 PM 0
4.55 GOOTTING PAN
4.65 06/07/66 01:10 PM 06/07/86 01:10 PM 64.5 L@ 1.9 LPM 4.65 06/07/86 01:10 PM 06/07/86 01:10 PM 64.5 L@ 1.9 LPM 4.65 06/07/86 01:10 PM 06/07/86 01:31 PM 06/07/86 02:09 PM 0
4.65 0007786 01:10 PM 0807786 01:10 PM 66.5 L@ 1.6 LPM 4.65 0007786 01:10 PM 66.5 L@ 1.6 LPM 4.65 0007786 01:10 PM 66.5 L@ 1.6 LPM 4.65 0007786 01:10 PM 66.5 L@ 1.6 LPM 6.65 0007786 01:15 PM 6007786 01:21 PM 6007786 01:21 PM 6007786 02:09 PM 60
4.55 00007786 01:10 PM 04007786 01:10 PM 64.5 L@ 1.6 LPM 4.56 00007786 01:10 PM 04007786 01:51 PM 64.5 L@ 1.6 LPM 4.56 00007786 01:51 PM 04007786 02:09 PM 05007786 02:09 PM 0
4.65 06/07/76 01:10 PM 06/07/76 01:51 PM 64.5 L@ 1.6 LPM 4.65 06/07/76 01:51 PM 06/07/76 02:09 PM 06/0
4.58 06/07/96 01:51 PM 06/07/96 01:51 PM 4.59 06/07/96 01:51 PM 06/07/96 02:09 PM 06
4.58 G6407789 O1231 PM G8407789 O131 PM G8.5 L G 3.3 L PM 4.59 G6407789 O1231 PM G8407789 O131 PM G8.5 L G 3.3 L PM 4.59 G6407789 G2509 PM G850 L G 3.3 L PM 6.50 G7789 G2509 PM G850 L G 3.3 L PM 6.50 G7789 G2509 PM G850 L G 3.3 L PM 6.50 G7789 G2509 PM G850 C7789 G2509 PM G850 L G 3.7 L PM 6.50 G6407789 G2509 PM G850 C7789 M G8.5 L G 3.7 L PM 6.50 G6407789 G2509 PM G850 C7789 M G8.5 L G 3.7 L PM 6.50 G6407789 G2509 PM G850 C7789 M G8.5 L G 3.7 L PM 6.50 G6407789 G2507 PM G8.5 L G 3.7 L PM 6.50 G6407789 G2507 PM G8.5 L G 3.7 L PM 6.50 G6407789 G2507 PM G8.5 L G 3.7 L PM 6.50 G6407789 G2507 PM G8.5 L G 3.7 L PM 6.50 G6407789 G2507 PM G8.5 L G 3.7 L PM 6.50 G6407789 G2507 PM G8.5 L G 3.7 L PM 6.50 G6407789 G2507 PM G8.5 L G 3.7 L PM 6.50 G6407789 G2507 PM 6.50 G6407789 G2507 PM 6.50 L G 3.7 L PM 6.50 G2507 PM 6.50 L G 3.7 L PM 6.50 G2507 PM 6.50 G
4.58 G607786 0121 PM G607786 01:51 PM G9.0 LG 3.8 LPM 4.59 G607786 01:51 PM G209 PM G9.0 LG 3.8 LPM 4.59 G607786 02:09 PM G209
4.56 05/07/86 01:21 PM 05/07/86 01:31 PM 63.0 L
4.59 06/07/86 02:09 PM 06/07/86 02:09 PM 4.59 06/07/86 02:09 PM 06/07/86 02:07 PM 06/07/86 03:7 LPM 06/07/86 03:27 PM 06/07/86 03:27 PM 06/07/86 03:27 PM 06/07/86 03:7 LPM 06/07/86 03:27 PM 06
4.59 0607786 02209 PM 0607786 02209 PM 66.5 L@ 3.7 LPM 4.64 0607786 02209 PM 0607786 02209 PM 66.5 L@ 3.7 LPM 4.64 0607786 02277 PM 0607786 0227 PM 0607786 02277 PM 0607786 0227 P
4.59 06/07/86 02:09 PM 06/07/86 02:27 PM 68.5 L  3.7 L PM . 4.64 06/07/86 02:27 PM 06/07/86 02:27 PM 06/07/86 03:27 PM 0
4.59 06/07/86 02:09 PM 06/07/86 02:09 PM 68.5 L  3.7 LPM . 4.64 06/07/86 02:27 PM 68.5 L  3.7 LPM . 4.64 06/07/86 02:27 PM 06/07/86 02:27 PM 06/07/86 02:27 PM 06/07/86 03:27 PM
4.59 0607786 02:09 PM 0607786 02:09 PM 68.5 L
4.60 06/07/96 02:09 PM 06/07/96 02:27 PM 66.6 L @ 3.7 LPM . 4.64 06/07/96 02:27 PM 06/07/96 03:27 PM
4.69 06/07/96 03/27 PM 06/07/96 04/27 PM
TALL SAMPLE OF SAMPLE S
CONTRACTOR OF THE PROPERTY OF

employed in the second of the

_		Proce	Process Time Line	-Clne			T		$\exists$				!		•			Г
	•		Duration (Hrs.		<u>.</u>	Rel. Time Scale (Hrs.)	CENT.		7	Start		7	n in item					1
	Operation	<u> </u>	Ş	Ad).	Prep	Exec.	Comp.	Star	ā			Late Date				į		
		$\prod$				15.5			П	18	08:00 AM	1			CEICUIEROUS	<b>.</b>		٦
٠	9 C Hommodenization	I	I				1											П
																		Т
	Set Up	8		0.0	110.5			8.	8	96/0/90	02:27 PM		Ę					
	Cip	3,0		6:5		11.1		8	<b>3</b>	08/07/96	02-27 PM			66.5 L @	MG 1 PM			
_	5 B	? •		2 :			121	<u>\$</u>	4.67	08/07/86	03:07 PM				2		0.58 MG	
_	Clean Up	2 0	9 6				2	4.67	5	06/07/98	OK:07 PM	06/07/96	05:07 PM					
252	Sub Total	3.7		2		1111		\$	2	86/07/98	05:07 PM							$\neg$
	10 C Heat Exchange	$\prod$					1	1					•					
	•							-										T
	Set Up	0.0			111.1			4.63	.5	ACT TAR	m:07 D11							
	Transfer	0.30		S		13.4		3	ş	96/20/90	83:07 PM			9	MO! AL			_
	- <del>-</del> -	2 :					112.4	2	4.68	96/20/30	03:25 PM				E		EH 05:0	_
	Clean Up	- 0	3 0	2.0			7	<b>3</b> (	Ç	96/20/90	04:25 PM	06/07/96	0525 PM					
	Subtotal	33		2		E		7		06//000	05:25 PM							
٠.													:					
_	11 A Resolubilization							T	T									٦
	Set Up	5		.1	,													_
	Diluden	5 5		20.0	108.9			67	2	06/07/96	11:52 AM	06/07/96	12:52 PM					_
	Acitate	3 6		6.0		4.6		Ž	8.	06/07/96	12:52 PM	06/07/796		206.9 L.@	8.9 LPM			
	GD	9 6	3 6			7. 20.	0007	8	4. S	08/2/30	91:22 PM	06/07/98			i		0.50 HG	_
	SIP	0		, O.O.			2 6	2	ą i	08/07/98	01:52 PM	08/07/98						_
_ 1	Clean Up	0.0		0.0 Hrs			0.60	6 6	6 6	06/7/96	MA 25.10	06/1/96	25.52 25.52					
	Subtotal	2.0		2.0 Hrs		109.9		T	T		W. 35.10	ONO! IN			-			Т
	12 A Cont Cent/Solids	I	T		T	1		1	7									
													•					Г
	Set Up Centrification	2 5	000	1.0 Hrs	109.8			2.	4.58		12:52 PM	06/07/96	01:52 P.4					
	Wash	3 3		0.0 E E		9 9		3 5	8		01:52 PM	08/07/96	02.22 P.U	_				
	d :	0.0		0.0 Hri		-	110.5	8	3 5		Z 22 2	08/07/96	200	30 1 0	O.S LPM		0.10 EM	
	Cleanth	88		0.0 Fr.			110.5	8	8	06/07/86	228 P. H	06/07/06		_				
	Sub Total	3 =	1_	E 5.5	T	110.5	110.5	\$	8		0228 PM	08/07/98	0228 Pvi					
	4																	Γ
	11 B Resolublitzation				Γ	T		T	1	T			ľ			1		Т
	Set Up	00	0					**	.;				~					_
	Dilution	9	8	£		:	·	3 5	3 5	06/07/86	0228 PM	08/01/98	02.28 P.K					
	Agitate	20	8	55		112		3 5	7 5	98//00	0228 PM	86/2/98	25.50	206.9 L.@	6.9 LPM.		0.50 Hrs.	_
	d Cip	0.	8	5. EH		!	1122	8	2		W-1 8070	08/1/30	2.5				0.50 Hrs.	
	Clean to	9 9	0 0	1.0 H		_	1132	8	2	06/07/96	A:13 PM	06/07/08	S: 5: 5: 5: 5: 5: 5: 5: 5: 5: 5: 5: 5: 5:				•	
	Subtotal	99	1	3.8 Ha	Ť	2	2	5	5		05:13 PM	08/07/98	MG CT: SO			•		
	43 0 Cast A 44 to 11	]	7			•		-	_									Г
		_			Γ		Γ	r	t	T	T	T	T					Т
	Set Up	5.	0.0	£	1112	_		4.59			שנו שנו	Sem Prop	-6					
	Contingation	9 0	9 9	£	_	111.7		8			03:13 PM	08/07/86	8 5 5	278010				
	dio	3 5	9 6	를 :	_	<u>8.</u>		8.			03:43 PM	06/07/96	S	90.05	7. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5.		0.50 5. 13 1. 13	
	dis	3 5	3 8	0.3 H.3		-	112.1	4.68			00:49 PM	96/0/90	20.2					_
	Clean Up	0.5	3 8			_	13.	6	Ę!	06/07/96	00.00 PM	06/07/96	05:04 P.C					
	Sub Total	7.	T	£ 5	Ť	9		#	L		05:04 PM	86/07/98	Z 7.55		,			_
٠,٠	43 A Deceliabilitation		1									-	-	•				_
	c		<del>.</del>	_	-	-	-	$\vdash$	$\vdash$				(:					$\overline{}$
												•	্বা		•			-
				•											-			

FIG. 12 E

\*\*\*\*

18 W

.

m 8000

	Proce	Process Time Line	Line											
	Ourst	Duration (Hrs.)	-	Ref.	Ime Sp	• Spale (Hrs)	Abs. Dave		Start	.1111111141111		ì		
·	<u>5</u>	Ş	Adj.	6 6	- 50	() itif it.	Start		Date		i		<del></del>	i
				$\downarrow$	15.5				08/03/96	08:00 AM				3
	0.5	88	1.0 Krs	110.5			4.56	8	06/07/96			i .		
	5.0		18.0 Hrs		1290		8 5	2	96/20/90				1 60.7 L@	20 02
	2;		1.0 Hs					2 2	06/07/08					
	3 9		6. 0. E. E.			13.0	5.42	97.5	06/06/96	09:58 AM	06/08/86	10:58 AL	-	
	22.5	1	22.5 Hrs	$\perp$	129.0	272	_1	3	860808					
l s				1				7						
	-	- ;	:						٠	••		•		
	2 6	3 8	1.0 Hg	127.6			628	3	06/08/36					-
	0.7	8	0.7 H3	129.0				3 5	08/08/98				. 84.0 L	3.0 L/S
_	2 3	88	1.0 Hrs		130.0		537	3	9670790				8 5	S :
	5 6	2 6	, o		30.5		5.42	\$ .	06/08/96				13.6	20.00
	3	8	. E		2	131.7	5 5	5	06/08/98				729	30 0.5
	0.7	00	0.7 Hrs			132.3	5 5	3 5	06/06/96				27.0 1	30 00
	9 9	0 0	6. c			55	5.51	8	06/08/96				2	30.5
	2	8	1.0 Hrs			135.3	8 8	8 2	96796796	01:19 PM	96/20/96	02:19 PM		
	8.7		8.7 Hrs		131.3				2000					
_	I	$\dagger$					1	7				: .		ą Ž
		- ;									•			
-	2 5	9 6	5.5 E 1	131.1			6.42	5.46	96790790	10:03	9670809			
	3	00	 E	1913			6.4.6 4.46	5.47	96/26/20	<u> </u>	96/08/96		.252 L	16.0 L/SI
	500	0 6	0.5 F. Ha		131.8		5.47	\$	9679090	=======================================	08/08/96		227 6 22	15.0 15.0
	38	9 9	5 5 5 5 5 5 5 5		5	310	6,49	64.9	96/90/90	1.5	96700790			15.0 15.0 15.0 15.0
	5 :	000	0.1 Hrs			5.5	6	8	80000		06/08/98		3	15.0 L/S
	5 6	0 0	6. 5 5. 5 5. 5			132.9	9:50	2	06/08/96	135	06/08/96		12.6	15.0 1.55
	2	8	1.0 H			134.9	6. 8. 5. 8.	5 55 50 50 50 50 50 50 50 50 50 50 50 50 5	987989	12:55 PM	06/08/96	01:55 PM		
	e e	-	4.0 Hrs		131.8		r				2			
	T	f			†	1	t	†				٠٠:		
		-											63.6 L CV	0.4 H/D
	0.7	9	0.7 Ha	2	132.5	-	£ 6	3 5	06/08/96	10:17 AM	96796796	11:24 AM		100.0 CM
	2:	00	1.3 Hs		133.9		5.52		96796796	11:49 AM	08/08/38	12:31 PM	1005 1.00	50.0 CM
	3 8	9 6	E :		135.2		5.58		08/08/96	01:52 PM	967080	03:12 Pu		\$0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
	57	8	0.2 Ha		735.2		6 5	_	96708796	03:12 PM	06/08/36	03:12 PM	96	30.00
	3 3	00	0.4 Hrs				3		80000	M. 12 P.M	08/08/36	82.25 25.74	٠.	100.0 CMA
	9 6	9 6	5. E				5.66		96790790	03:62 PM	06/06/30	0.52 Pu	_	100.0 CMS
	3 9	3 8	5. C.			37.0	6.70	5.74	96/90/90	O4:52 PM	06/08/36	05:52 PM		
	5.2	$\vdash$	5.2 Hrs	T	135.2		<u> </u>	_ !	86708798	05:52 PM	96/20/90	08:52 PM		4
	$\dashv$	$\dashv$												Max
	90		3										12.2 L CV	0.4 H/D
	=		£	35.6	- 8		2 2				96780/90	03:38 PM	_	100.0 CMA
	89.6	0.0	0.8 Hrs		37.1		2.68	_			96708796	2 2 2	٠.	50.0 CM/H
	38		8.0 E H E H		137.8		5.71	5.74	OGVOGNBG	05:03 PM	9679030	05:49 PM	36.6 1.0 1.0 1.0 1.0	50.0 CMAH
•	•		-	-	-	_	•	_			9670000	05:49 PM	-	30.0 CM/H
			•									<b>.</b>		٠

0.50 Hrs. 23.50 Hrs.

1.35 LPM 1.35 LPM

26.99 SF

1.35 LPM

12.60 SF

3.15 LPM 3.15 LPM 3.15 LPM 3.15 LPM 3.15 LPM 60.32 CM DIA.

4.76 LPM 2.38 LPM 2.38 LPM 2.38 LPM 1.43 LPM 4.76 LPM 4.76 LPM M.76 CM DIR

1.58 LPM 0.79 LPM 0.79 LPM 0.79 LPM 0.47 LPM

4.76 LPM

FIG. 12F

100

Æ

	৳
	7
•	
	り H
	FIG

###	Controlled   Con			Process Time Line	I				_										
Separation   Colo   Act   Colo   Co	Separation   Col.   C		•	Duradon	EF.		30. TH	Scale		10.6		1							
Pagements   Cali   Ca	Pagements   Col.   Co		Operation		-6			- 0 3 8 8	_	_	_0				• EL		Calculations		
Supplement   Sup	Supplement   Col.   C			Ц	H			15.5	H	Ц	Н	9670	08:00 AM			l			
Canality   10   10   10   11   11   11   11   1	Charley   Color   Co		Regenerate		0.0	0.1 Hrs		_					05:49 PM	98/08/98	05:57 PM		CMAR		
September   Color	Service 15 0 0 10 No. 1 11 11 11 11 11 11 11 11 11 11 11 11		<b>2</b> 000 C		3 6	3 5							75.50 De-13 Du	20000	200				
Care Day   10	Sep Team   1, 0		S SS		38	£		_					07:13 PM	96/90/90	8 13 14				
So   Color	So   Color		Clean Up		3	5. F.	7	1	_		_	- 1	08:13 PM	987080	09:13 PM				
Set'lp 0.0 0.10 hr 1313	Set Up   10		Sub Total	6.7			<u> </u>	137.8		<u> </u>		-					MaxFR	-	.58 LPM
Serup 10 10 0.0 10 hr 1313 1315 1315 1315 1315 1315 1315 131	Serup		<	+	$\dagger$	T	$\dagger$	$\dagger$	T	†	+	T						12	
From Corp.   C	From the control of t				-	إ			_	-		2000	100000	ag-u-u-u-u-u-u-u-u-u-u-u-u-u-u-u-u-u-u-u		-			
Principation   107   108   118   1	Digital   Color   Co		Set Up	2 6	2 6	5 5	137.2			0.00			04:29 PM	96790	00:00	24.4 L	LSFM		
Color   Colo	10   10   10   10   10   10   10   10		Prima	6.0	3	£	137.8	_		5.72			05:09 PM	9679090	05:49 PM	24.4 L	LSFIRE		
Name	Number   Cot   C		Dialysis	9	80	문	_	138.8	_	5.74			05:49 PM	967080	06:49 PM	36.6	USFAR		
Superior   0.2   0.0   0.2   He   1932	Superior   0.0   0.0   0.7   He   113.2   6.55   6.50		Wash	0.0	8			138.8		6.78			06:49 PM	96796796	06:49 PM	0.0	SFA		
Sub-field   10   10   10   11   11   11   11   1	Superior   10   10   10   10   11   131		Flush	60	00					5.78			06:49 PM	96/20/90	60:00	727	SFA		
CIP         110         0.0         110 <td>  Chart   10</td> <th></th> <td>Store</td> <td>0.7</td> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td>3.5</td> <td></td> <td></td> <td>07:09 PM</td> <td>98090</td> <td>07:49</td> <td>24.4 L</td> <td>1</td> <td></td> <td></td>	Chart   10		Store	0.7	8					3.5			07:09 PM	98090	07:49	24.4 L	1		
Sub Total   1,0   0,0   1,0 Pm   14,18   8,17   8,18   0,000000   0,000000   1,00000   1,0000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,000000   1,0000000   1,0000000   1,000000   1,00000000   1,0000000   1,0000000   1,0000000   1,00000000	Sub Total   1.0   0.0   1.0 Pm   14.18   8.17   8.17   14.18   8.17   14.18   8.17   14.18   8.17   14.18   8.17   14.18   14.18   8.17   14.18   8.17   14.18   8.17   14.18   8.17   14.18		Gib	9	0	5		_	_	3			07:49 PM	96/06/36	2 S	•			
Color	Case		dis e	9:5	0.0	1.0 Hrs		_		9			08:49 PM	200000	08:49 P.H				
Company   Comp	Subject   Color   Co		Clean Up	3,	3		1	100	Д,			8	E	2000	200		Us. CD	١	101
Equilibration   0.5   0.0   0.5   ivi   1345   1351   1351   137	Four-black   Color		Sub Total	<u>.</u>				20.0		•							Y Y	,	10.
Equilibration 0.5 0.0 0.5 Fib. 138.5 138.1 138.5 K.77 000000 0550 PM 000000 05770 PM 0000000 05770 PM 000000 05770 PM 0000000 05770 PM 000000 05770	Equilibrillor 0.5 0.0 0.5 His 138.5 138.1 5.77 600000 0550 PM 000000 07710 PM		<	-	$\vdash$		Γ	T		$\vdash$	1					L		2	S
Equilibration 0.0. 0.0. 0.0 Hrs. 1333 6.75 6.77 6.77 0.000000	Figure   Color   Col	_			;					-						:		,	
Supplementary   Color   Colo	Control   Cont	2	Equilibration	9 6	0 0	0.5 F. T.	138.5		_	2.3		06/06/06	05:59 PM		8 8	, , ,	100.0 CAWHR	- (	
Eliuse   0.00   0.0	Educary   Color		רספס	7 6	3 6	7 7			_	0 0		200000	70.40		3 5	2 6	20.00 CMM2	, .	
Elbace   0.0   0.0   0.1   1.0   1	Figure 2   0.0   0.0   1.0	_	Neason .	9 6	3 6	2 2	_	1,603				9870790	07:41 PM		08:20	20.02	50.0 CWHR	, .	
Proposerial   0.1   0.0   0.1   Hrs   14.0   8.55   8.50   0.000000   0.0229 PM   0.00000   0.0239 PM   1.00   0.00000   0.0239 PM   1.00   0.00000   1.10   Pm   1.417   8.50   8.50   0.000000   0.0239 PM   0.000000   1.139 PM   1.00   0.00000   1.139 PM   1.00   0.	Superation   Color	_	Elute 8	3	8	500 E		140.3		6.85		96790790	08:20 PM		08:20	0.0	30.0 CMAHR		
Signer         0.2         0.2         1.0<	Service 0.2 0.0 0.2 Hrs 1417 545 549 6000000 0.022 PM 0000000 0.022 PM 0000000 0.022 PM 0000000 0.022 PM 0000000 0.023 PM 145 LG 1417 541 541 541 541 541 541 541 541 541 541	_	Regenerate	8	8	0.1 Hrs			140.4	5.83		06/06/36	08:20 PM		08:26	7.0 L	100.0 CM/HR	_	
Clean Up   1.0   0.0   1.0   Hrs   14.27   5.94   5.99   GORDONG   GORDONG   11.039 PA	Clean Up	_	Store	2	8	0.2 Hrs		-	140.7	5.65	_	96702790	08:26 PM		08:39	13.9 L	100.0 CMMR	_	
Clean Up	Sub-Total   1.0   0.0   1.0   Hrs   14.27   E.94   E.99   DOCUMEN   11.39 PA    MAKER   1.09 LPA   1.00 LPA	_	CIP	<u>0</u>	00	1.0 Hrs			141.7	5.86		9679090	M9 60:30		80.39				
Supring   Start   Supring   Start	Such children   S.4	_	dis d	9 9	0 0				142.7	8 8		96/06/96	09:39 PM		600				
Fluid   Start   Star	Set Up   Color   Col	; <u> </u>	Sub Total	7.6	1	5.4 Hrs		140.3									MaxFR		.09 LPM
Set Up	Set Up   Set Up Up   Set Up Up   Set Up Up   Set Up Up   Set Up	_			7							٠							
Set Up	Set Up  Filath  O27	_	<		$\vdash$					Г									
Figure   Coronado	Furth	_		5	ć		000			67.9	6 70	Cemenoe	7.00 G1						
Prime 0.7 0.0 0.7 His 140.3 142.3 5.85 6600876 0520 PM 6000876 0520 PM 4.8 LG 3.0 L/SFHr or 0.12 LPN Fluid Name	Prime 0.7 0.0 0.7 His 140.3 1.8 5.85 0500269 073.0 PM 0500269 1020 PM 4.5 LG 3.0 LSFHr or 0.12 LPN Visib 0.0 0.0 0.0 His 142.3 5.91 5.94 0500269 1020 PM 0500269 1120 PM 05002	_	TO SEL	20	2 0		7.00			2 2	5 82	08/08/08	07:00 PM		_	1 6 7	I KEM		
Ulabysis         2.0         0.0         LVHs         142.3         5.83         6.90         0.020 PM         0.00 COD PM </td <td>  Visit   Color   Colo</td> <th>_</th> <td>Prime</td> <td>0.7</td> <td>8</td> <td></td> <td>140.3</td> <td>_</td> <td></td> <td>5.82</td> <td>6.85</td> <td>06/08/98</td> <td>07:40 PM</td> <td></td> <td></td> <td>6.9</td> <td>LSFM</td> <td></td> <td></td>	Visit   Color   Colo	_	Prime	0.7	8		140.3	_		5.82	6.85	06/08/98	07:40 PM			6.9	LSFM		
Wash         QLO         QLO <td>Wash         0.0<th>_</th><td>Dialysts</td><td>22</td><td>8</td><td></td><td></td><td>142.3</td><td></td><td>5.85</td><td>5.93</td><td>9679090</td><td>08:20 PM</td><td></td><td></td><td>14.6 L</td><td>LSFAR</td><td></td><td></td></td>	Wash         0.0 <th>_</th> <td>Dialysts</td> <td>22</td> <td>8</td> <td></td> <td></td> <td>142.3</td> <td></td> <td>5.85</td> <td>5.93</td> <td>9679090</td> <td>08:20 PM</td> <td></td> <td></td> <td>14.6 L</td> <td>LSFAR</td> <td></td> <td></td>	_	Dialysts	22	8			142.3		5.85	5.93	9679090	08:20 PM			14.6 L	LSFAR		
Fluish   0.3 0.0 0.3 Hrs   14.27 5.93 5.94   6800,000   11.20 PM   0600,000   11.20 PM	Fluid		Wash	0.0	0.0			142.3		5.93	5.93	08/08/98	10:20 PM			0.0 L	LSFAR		
Store   0.7   0.0   O.7   Hrs   14.23   S.94   S.97   G.97   G.020-Ge   1120 PM   G.020-Ge	Store		Flush	0.3	0.				142.7	5.93	3.5	96/20/90	10:20 PM			74 1	LSFAR		
Claim   Color   Colo	Clean Up	_	Store	0.7	0				143.3	3	5.97	96790	10:40 PM			4.9 L	CSFA		
Clean Up   0.0   1.0   1.0   Hz   142.3   14	Clean Up   0.0   1.0   1.0   Hz   142.3   14	66 5	8 8	0 0	0.0				55.3	5.97	6.6	06/08/96	1120 PM						
Sub Total         4.3         5.3 Hrs         142.3         6.81         6.81         0000000         0000000         000000         0000000         0000000<	Sub Total         4.3         5.3 Hrs         142.3         6.81         6.81         CoCOLDS         COCOLDS<	9	Clean Up	9	9				1	597	6.0	98798	11:20 PM						
A PIAMPLC         6.5 0.0         0.5 Hrs         142.0         6.5 1.5 <t< td=""><td>Equilibration 0.5 0.5 Hrs 1420  Equilibration 0.5 0.0 Hrs 1420  Load 0.1 Hrs 143.0 6.89 6.81 0600678 09228 PM 0600678 1735 PM 150 L@ 50.0 CM/HR 0.51 LPA 143.0 6.99 6.89 0600878 1735 PM 0600878 1735 PM 150 L@ 50.0 CM/HR 0.51 LPA 143.0 6.99 6.89 0600878 1735 PM 0600878 17</td><th></th><td>Sub Total</td><td>4:0</td><td>Γ</td><td></td><td></td><td>142.3</td><td></td><td>T</td><td>Γ</td><td></td><td></td><td>٠.</td><td></td><td>Ŀ</td><td>MaxFR</td><td></td><td></td></t<>	Equilibration 0.5 0.5 Hrs 1420  Equilibration 0.5 0.0 Hrs 1420  Load 0.1 Hrs 143.0 6.89 6.81 0600678 09228 PM 0600678 1735 PM 150 L@ 50.0 CM/HR 0.51 LPA 143.0 6.99 6.89 0600878 1735 PM 0600878 1735 PM 150 L@ 50.0 CM/HR 0.51 LPA 143.0 6.99 6.89 0600878 1735 PM 0600878 17		Sub Total	4:0	Γ			142.3		T	Γ			٠.		Ŀ	MaxFR		
Figure   F	A PIAMPLC         A PIAMPLC           Equilibration         0.5         0.0         0.1         142.4         6.83         6.84         0600006         692.8 PM         060026         07.57 PM         20.6 LG         100.0 CMMR         0.51 LPA           Load         0.0         0.0         0.1 Hm         143.0         6.84         6.89         6.000006         102.8 PM         060026         17.50 PM         100.0 CMMR         0.45 LPA         0.50 CMMR         0.45 LPA         0.45 LPA         143.0 PM         143.0 PM         160.0 CMMR         0.51 LPA         0.50 CMMR         0.51 LPA         0.50 CMMR         0.51 LPA         0.50 CMMR         0.51 LPA         0.50 CMMR         0.51 LPA         0.51 LPA         0.50 CMMR         0.51 LPA         0.51 LPA         0.50 CMMR         0.51 LPA         0.50 CMM	_	ı		1			]		1	1					ı			ı
0.5 0.0 0.5 Hrs 142.0 142.4 5.93 6.84 0600876 10220 PM 0600876 11:35 PM 16.0 LG 50.0 CW/HR 0.45 0.0 0.0 Hrs 143.0 6.99 6.80 0600876 11:35 PM 0600876 11:35 PM 16.0 LG 50.0 CW/HR 0.45 0.0 0.0 Hrs 143.0 6.99 6.00 0600876 11:35 PM 0600876 11:35 PM 16.0 LG 50.0 CW/HR 0.45 0.0 0.0 Hrs 143.0 6.99 6.00 0600876 11:35 PM 0600876 11:35 PM 16.0 LG 50.0 CW/HR 0.45 0.0 0.0 Hrs 143.7 6.99 6.00 0600876 11:35 PM 0600876 11:35 P	0.5 0.0 0.5 Hrs 142.0 142.4 6.59 6.84 0600876 102.0 PM 0600876 11:0 PM 16.0 L	\$ 5	٧												<u> </u>	ı		Ā	5
0.1 0.0 0.1 Hrs 142.4 6.59 6.49 6000006 1020 PM 0600006 11:01 PM 160.16 6.00 CWHR 0.45 0.0 0.0 Hrs 143.0 6.59 6.00 000000 11:01 PM 160.16 0.0 0.0 Hrs 143.0 6.99 6.00 000000 11:01 PM 0600000 11:01 PM 160.16 0.0 0.0 LG 50.0 CWHR 0.45 0.0 0.0 Hrs 143.0 6.99 6.00 000000 11:01 PM 0600000 11:01 PM 160.16 0.0 0.0 LG 50.0 CWHR 0.45 0.0 0.0 Hrs 143.0 6.99 6.00 000000 11:01 PM 0600000 11:01 PM 160.16 0.0 0.0 LG 50.0 CWHR 0.45 0.0 0.0 Hrs 143.0 6.99 6.00 0600000 11:01 PM	0.1 0.0 0.1 Hrs 142.4 6.59 6.49 0600396 1020 PM 0600396 11:00 PM 16.0 L@ 6.00 CWHR 0.45 0.0 0.0 Hrs 143.0 6.59 6.30 0600396 11:00 PM 0600396 11:00 PM 16.0 L@ 6.00 CWHR 0.45 0.0 0.0 Hrs 143.6 6.39 6.00 0600396 11:30 PM 0600396 11:30 PM 16.0 L@ 50.0 CWHR 0.45 0.1 0.0 0.1 Hrs 143.7 6.39 6.00 0600396 11:30 PM 0600396 11:30 PM 16.0 L@ 100.0 CWHR 0.27 0.0 L@ 10.0 CWHR 0.39 0.0 0.0 Hrs 143.9 6.00 6.00 0600396 11:54 PM 060		Equilibration		00		142.0			5.89	5.93	9679090	09:28 PM		75:60	26.6 L	100.0 CMMR		
0.6 0.0 0.6 Hrs 143.0 6.94 6.99 0000096 10.25 PM 0000396 11:90 PW 16.0 LG 50.0 CWHR 0.45 0.0 0.0 Hrs 143.6 6.99 6.80 0000096 11:90 PM 0000396 11:30 PW 16.0 LG 50.0 CWHR 0.45 0.0 0.0 Hrs 143.7 6.98 6.00 0000096 11:30 PM 0000396 11:30 PW 0.0 LG 50.0 CWHR 0.45 0.0 0.0 Hrs 143.7 6.98 6.00 0000096 11:30 PM 0000396 11:30 PW 0.3 LG 100.0 CWHR 0.27 0.0 0.0 Hrs 143.9 6.00 0000396 11:32 PM 0000396 11:30 PW 0.3 LG 100.0 CWHR 0.91 0.0 0.0 Hrs 143.9 6.00 0000396 11:32 PM 0000396 11:30 PW 0.3 LG 100.0 CWHR 0.91 0.0 0.0 Hrs 143.9 6.00 0000396 11:34 PW 0000396 11:34 PW 0000399 11:34 PW 00003999 11:34 PW 0000399 11:34 PW	0.6 0.0 0.6 Hrs 143.0 6.94 6.99 0000090 11:01 PM 0600090 11:01 PM 16.0 L@ 50.0 CM/HR 0.45 0.0 0.0 Hrs 143.6 6.99 6.00 000090 11:01 PM 0600090 11:05 PM 16.0 L@ 50.0 CM/HR 0.45 0.0 0.0 Hrs 143.7 6.98 6.99 0000099 11:05 PM 0600090 11:05 PM 16.0 L@ 50.0 CM/HR 0.27 0.0 0.0 Hrs 143.9 6.00 000099 11:05 PM 0600090 11:05 PM 16.0 L@ 50.0 CM/HR 0.27 0.0 0.0 Hrs 143.9 6.00 0000990 11:05 PM 0600090 11:05 PM 10.0 L@ 100.0 CM/HR 0.01 0.0 Hrs 143.9 6.00 0000090 11:05 PM 0600090 11:05 PM 10.0 CM/HR 0.91 0.0 0.0 Hrs 143.9 6.00 0000090 11:05 PM 0600090 11:05 PM 10.0 L@ 100.0 CM/HR 0.91 0.0 0.0 Hrs 143.9 6.00 0000090 11:05 PM 0600090 11:05 PM 10.0 L@ 100.0 CM/HR 0.91 0.0 0.0 Hrs 143.9 6.00 0000090 11:05 PM 0600090 11:05 PM 10.0 L@ 100.0 CM/HR 0.91 0.0 0.0 Hrs 143.9 6.00 0000090 11:05 PM 0600090 11:05 PM 0600090 11:05 PM 10.0 L@ 100.0 CM/HR 0.91 0.0 0.0 Hrs 143.9 6.00 0000090 11:05 PM 0600090 11:05 PM 0600000 11:05 PM 060000 11:05 PM 0600000 11:05	_	Load	8	0		į	142.4		583	ĭ	9678090	10.20 PM		50.00	297	50.0 CWMR		
0.6 0.0 0.6 Hrs 143.6 5.96 5.98 0000000 11:30 PM 0600000 11:30 PM 10.0 L@ 50.0 CM/HR 0.45 0.0 0.0 Hrs 143.6 5.98 6.00 0000000 11:30 PM 0600000 11:30 PM 0600000 11:30 PM 0.0 L@ 30.0 CM/HR 0.27 0.0 0.0 Hrs 143.8 5.99 0000000 11:30 PM 0600000 11:3	0.6 0.0 0.6 Hrs 143.6 5.96 5.98 0600.96 11:36 PM 0600.96 11:36 PM 16.0 L® 50.0 CM/HR 0.45 0.1 0.0 0.1 Hrs 143.6 5.99 6.00 0600.96 11:36 PM 0600.96 11:36 PM 0.0 L® 30.0 CM/HR 0.27 0.1 0.0 0.1 Hrs 143.9 6.00 6.00 9600.96 11:34 PM 0600.96 11:34 PM		Wash	9;	0.0			143.0		2.5	8.8	9679090	1028 PM		5	10.0	SO.0 CM/HR	_	
0.0 0.0 0.0 Hrs 143.6 143.6 5.98 0000.09 11:35 PM 06.0296 11:35 PM 0.0 L@ 30.0 CM/HR 0.27 0.1 Hrs 143.7 5.98 5.99 0000.09 11:32 PM 06.0296 11:32 PM 05.0 L@ 100.0 CM/HR 0.91 0.0 0.0 Hrs 143.9 6.00 0000.09 11:34 PM 06.0296 11:34 PM 10.6 L@ 100.0 CM/HR 0.91 0.0 0.0 Hrs 143.9 6.00 0000.09 11:34 PM 06.0298 11:34 PM 10.6 L@ 100.0 CM/HR 0.91 0.0 0.0 Hrs 143.9 6.00 0000.09 11:34 PM 06.0298 11:34 PM 06.0299 11:34 PM 06.	0.0 0.0 0.0 Hrs   143.6   143.8 6.88 0800096 11:36 PM 06.0296 11:36 PM 0.0 L® 30.0 CM/HR 0.27   143.9 6.00 0.0 1 Hrs   143.8 6.89 6.00 0800096 11:42 PM   06.0296 11:32 PM   0.0 L® 100.0 CM/HR 0.91   143.9 6.00   6.00 0800096 11:42 PM   06.0296 11:32 PM   0.0 L® 100.0 CM/HR 0.91   0.0 0.0 Hrs   143.9 6.00   6.00 0800096 11:54 PM   06.0296 11:34 PM   0.0 L® 100.0 CM/HR 0.91   0.0 0.0 Hrs   143.9 6.00   6.00 08.0296   11:54 PM   06.0296   11:54 PM	_	Elute A	9.0	00			143.6		9.38	6.9	96708090	11:01 PM		<u>=</u>	16.0 L	50.0 CMMR	_	
0.1 0.0 0.1 Hm 143.7 5.98 6.09 0808.98 11:32 PM 0808.98 11:42 PW 6.3 LG 100.0 CM/HR 0.91 0.0 0.0 Hm 143.9 6.09 6.00 0808.98 11:54 PM 0808.98 11:54 PM 10.6 LG 100.0 CM/HR 0.91 0.0 0.0 Hm 143.9 6.00 0808.98 11:54 PM 0808.98 11:54 PM 10.6 LG 100.0 CM/HR 0.91 0.0 0.0 Hm 143.9 6.00 0808.98 11:54 PM 0808.98 11:54 PM 10.6 LG 100.0 CM/HR 0.91 0.0 0.0 Hm 143.9 6.00 0808.98 11:54 PM 0808.98 11:54 PM	0.1 0.0 0.1 Hm 143.7 5.98 6.99 0608.096 11:34 PM 65.3 LG 100.0 CMAR 0.91 0.0 0.0 Hm 143.9 6.00 0608.096 11:54 PM 0608.09 0.0 Hm 143.9 6.00 6.00 0608.096 11:54 PM 0608.09 11	_	Elute B	<u>8</u>	0.0			143.6		5.98	5.99	967090	11:38 PM		55	0.0	30.0 CMMR	_	
0.2 0.0 0.2 Hrs 143.9 6.59 6.00 06.00.06 11:54 PM 06.02.06 11:54 PM 10.6 L@ 100.0 CM/HR 0.91 0.0 0.0 Hrs 143.9 6.00 6.00 06.00 06.00 06.00 11:54 PM 06.02.06 11:54 PM 10.6 L@ 100.0 CM/HR 0.91 0.0 Hrs 143.9 6.00 6.00 06.00 06.00 06.00 11:54 PM 06.02.06 11:54 PM	0.2 0.0 0.2 Hrs   143.9 6.99 6.00 06.02.96 11:54 PM 06.02.96		Regenerate	6.7	8				143.7	5.98	5.99	9879878	11:38 PM		#75	63 L	100.0 CM/HR	Ī	
0.0 0.0 0.0 Hrs 11.35 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	0.0 0.0 0.0 Hrs 113.9 6.00 6.00 00.00 00.00 00.00 00.00 Hrs PM 00.00.00 0.0 Hrs PM 00.00 0.0 Hrs PM 00.0	21.0	Store	0.2	<u>0</u>				143.9	8.9	8	9670878	11:42 PM		<u>=</u>	10.6 L	100.0 CMMR	Ī	
0.0 0.0 0.0 Hrs   143.8 6.00 6.00 06/04/96 11:54 PM 06/06/96 11:54	0.0   0.0   Mm       143.9   6.00   0.00   0.00   11:54 PM   000.000   11:54	_	g	0.0	00				143.9	8	8	967080	11:54 PM		= 2				
		_	SIP.	<del>-</del>	<u>0</u>		_	_	143.9	8	8	967080	# P.		<u>=</u>	<del></del>			

· E

777	17
Ī	トHG.

<u> </u>	Duration (Mrs.,	£	·	- F	Scale	Rei. Time Scale (Hrs) Abs. Days	8 0 8		Start		Finish				
Calc. Ato	ΚI	Αο,		<u>ت</u> و	, O	Prop Exec. Complin Start Endin	T.		e parc		The state of the s				
-			-		15.5	l	t	r	ORMINOA	10.00	District Live	. Printer		Carculations	
1.0		9	10 Hz	-	-	933	8	1	20000	3					
17		-	21 44	ľ	100		3	3	86080	M. V.	11:54 PM 06/09/98	12:54 AM			
 i		<del>i</del> -	<u> </u>	-	2	_								Max FR	0.91 LPM
┞		L		$\dagger$	$\dagger$	$\dagger$	†	1					  -		
- 50				Ş	-		- ;				_				0.09 SF
0.5		0.5	Ha		. 77		Ž ŝ	9.5	96/60/90			08:36 AM			
0.5	0	0.5	£		<u> </u>	8771	8 8	3 8	2000			1208 AL	22 L@	50.0 L/SF/Hr or	r 0.07 LPM
0.0		0.0	Ę				3 8	3 8	98/80/90			12:38 AM			
00		00	£	_			3 6	3 8	96/60/90	12:36 AM		12:38 AM			
0.		0.0	-		•	2 5	3 6	3 5	DEVENOUS OF			12:38 AM			
5.		=	£	۲	3		†	1	2000	200	DEJECTOR.	1:36 AM			
-				_	_					•	_			Max FR	0.07 LPM

E

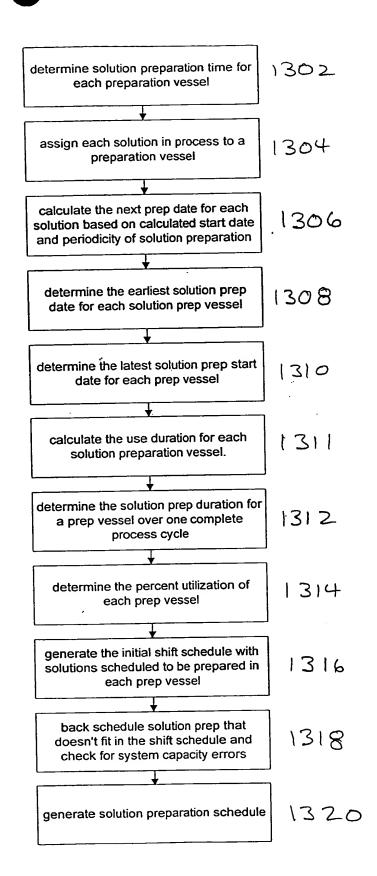
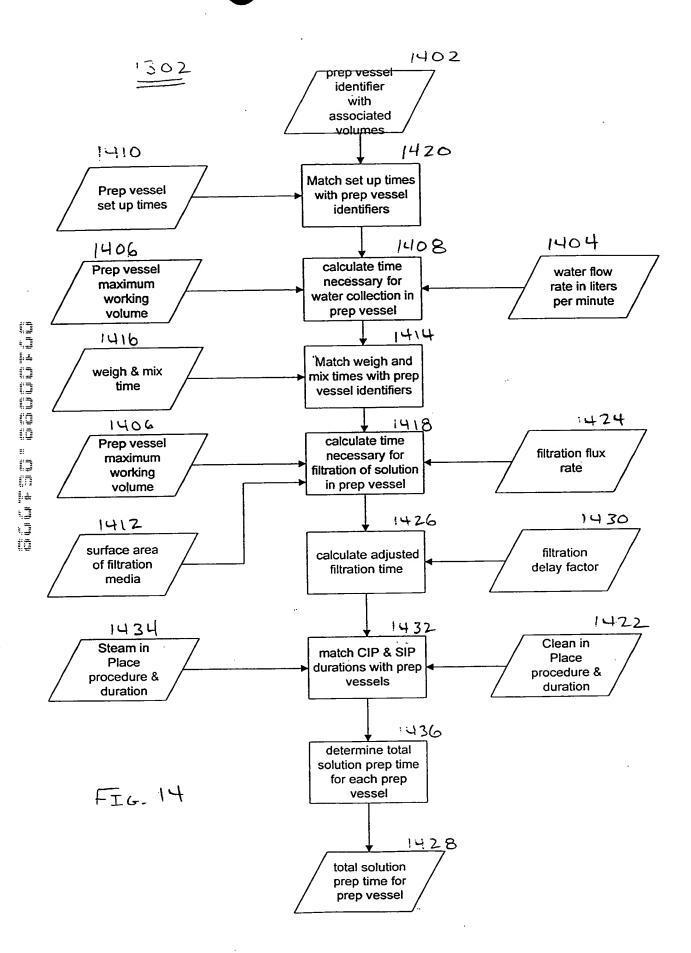


FIG-13

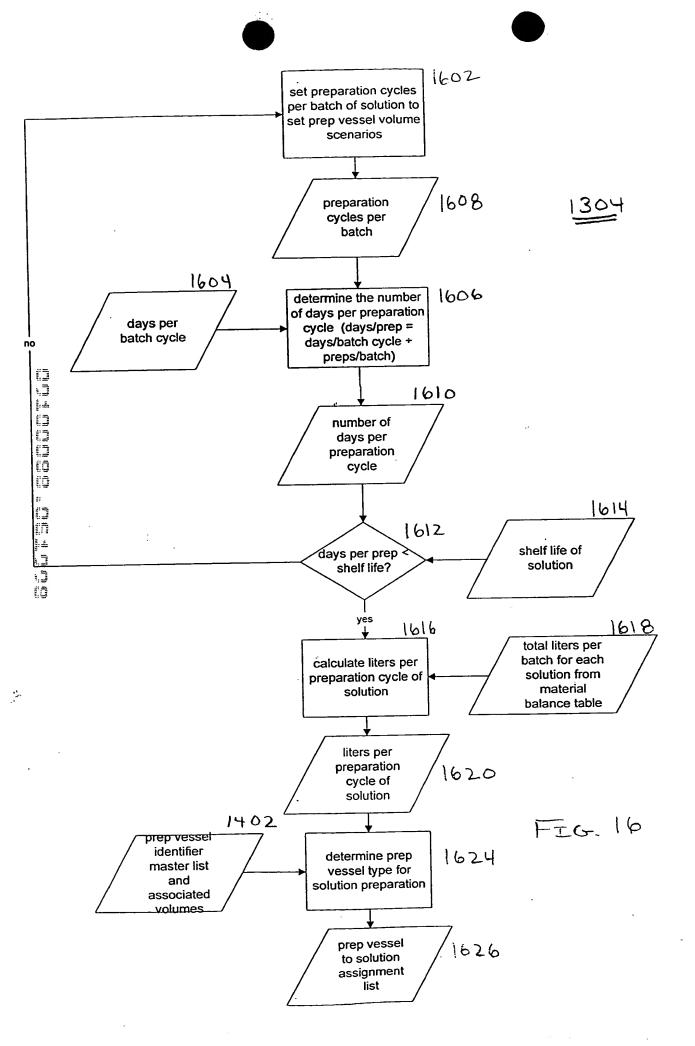


. . . . . .

ליינון הריים היינות היינות ליינות ליינות היינות בעיבות הריים היינות היינות

	-	797. CAII.	2% 4% 3% 8% 11% 11% 16%	
_	T	E E	0.5 0.5 1.1 1.3 1.8 2.1 2.1 2.9 2.9 4.6	
	Total	Min.	31.76 31.76 63.52 65.4 80.8 109.4 128.9 128.5 173 276	1428 14
_		SIP	04 04 04 04 04 04 04 04 04 04 04 04 04 0	757
		M.	09 09	_
	CIP	Cycle	5.78 6.76 11.52 14.4 28.8 14.4 GP-1 28.8 GP-1 24 GP-1 72 GP-1 72 GP-1	2
		Adj. Nin.	[ . ]	•
		Delay Factor	21 22 22 22 22 22 22 22 22 22 22 22 22 2	વ
	Ilration	Min.	8.8 9.6 9.6 4.2 4.2 2.4 2.4 2.0 2.0 3.0 3.0 3.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4	1506
	Utrafiliration/Microfiliration	LISFIHR	25 25 25 25 25 25 25 25 25 25 25 25 25 2	hz#1
	Uttrafille	PS.	2.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1412
		Mix Min.	25 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	d
	- T	Z.		4-4-50
	Water Collect	Medi	5 5 5 5 8 8 8 8	TO 7.
		Set Up Min.	20 20 20 20 20 20 20 20 20 20 20 20 20 2	<b>4</b> − <u>H</u>
		Max. LWV	2 2 50 500 500 500 500 500 500 500 500 5	907
	ļ <del>,</del>	Ewy	0.5 1 2 4 4 4 10 20 50 100 100 250 250 250 300 100 100 100 100 100 100 100 100 10	1007
		Batch Iank No.	102 103 104 106 108 108 108 110	<u> </u>
		_: ≩	0.6 1 2 4 4 10 20 50 10 1500	
		itch Tank	102 102 103 104 106 107 108 108 110	

FHG. 15



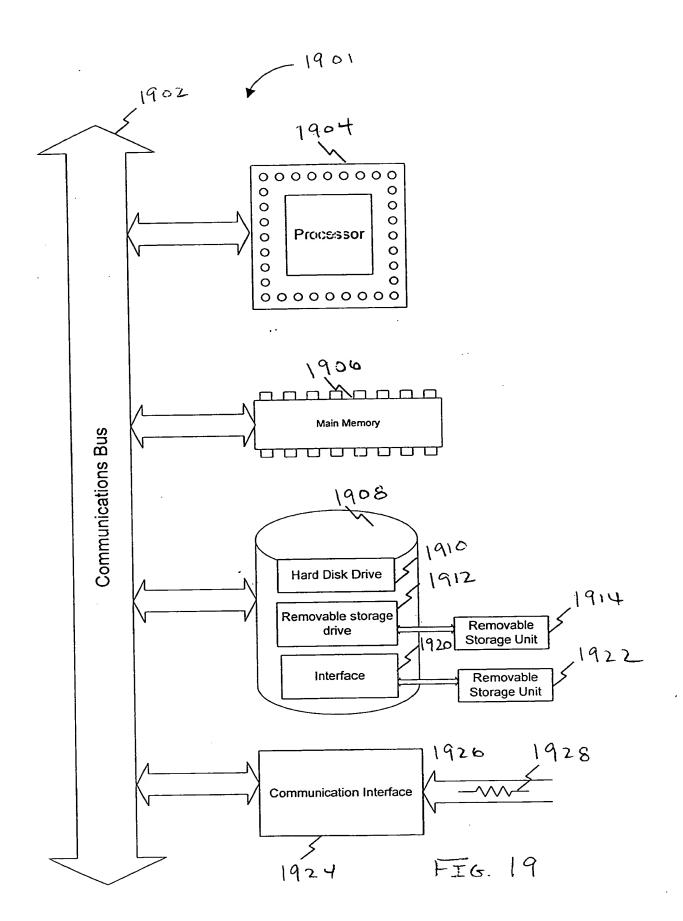
· wakak

					ष्ट्रा		
1	107	Ş	3 \$	107	1720		
	95	5	2 2	40° 178° 178° 178° 178° 178° 178° 178° 178			
اه	হ	-	28		416		
929	\$	$\vdash$	4 0	900 14			
}	٤	L	4.		7 4		
	5	L		102 102 0 14		·	
l	1	L		·	8	1	
			<b>9.6</b>		=	1	v
**************************************			Shelf	*************	ž +	- 3	<b>y</b> )
1 m		+		### ## ## ## ## ## ## ## ## ## ## ## ##	88	<u>_</u> _	
10			Shelf		-	16.14	
mat mat			Days! Prep		<u> </u>	1 2	5
n For		ŀ	<del></del> -	~~~~~~~~~~~~~~	-	004	
paig			Days/ Bat. Cy		8	00	
Solution Prep Campaign Format			Litera/ Prep	1,668.50 1,65 8,25 8,25 8,25 660.61 177.41 22.18 56.52 113.03 1,812.45 67.65 109.80 62.58	0.0	070/	
on Pr		-			-	- t	`
Soluti		ycles	Preps/ Batch			35.5	)
		Prep C		655 655 655 655 655 655 655 655 655 655	0.00		
50		Solution Prep Cycles	Liters/ Ratch	86 825 44 444		1618	
	T		A1g		0		
		Soln, Prep Format	5	*********	× ×		
		In. Pre	9		<b>5</b> 0		
	-			£		П	
		Contr	-	<u> </u>		П	
		Storage Court	<b></b>			П	
		<u> </u>	<u>[</u>	* *********		Π	_
			Soln.	S-0107 S-0102 S-0103 S-0104 S-0106 S-0108 S-0108 S-0108 S-0108 S-0108 S-0119 S-0119 S-0119 S-0119 S-0119 S-0119 S-0119	8-0121 8-0122 /	1	)
					82	Π -	
		i					

FIG. 17

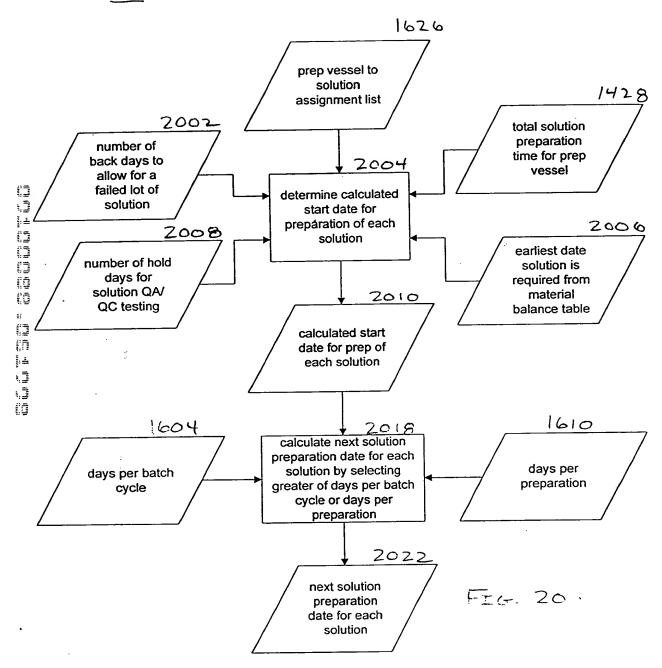
_				٦	
Took Die	4	101			
	_	F. F	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~		
		Next Prep	06/05/96 06/07/96 06/07/96 06/07/96 06/07/96 06/14/96 06/14/96 06/14/96 06/14/96 06/14/96 06/14/96 06/14/96		06/14/96
	-	Final	05/29/98 05/31/96 05/31/96 05/31/96 05/31/96 05/07/96 05/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96		05/29/98 Min
	t	Float Days	000000000000000000000000000000000000000		Min.
		init. Start	05/29/96 05/31/96 05/31/96 05/31/96 05/31/96 05/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96 06/07/96		
1		Hold	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
		Avail. By	05/31/85 06/04/96 06/04/96 05/04/96 05/11/96 06/11/96 06/11/96 06/11/96 06/11/96 06/11/96 06/11/96 06/11/96 06/11/96		
	Schedule	Back Days			
	Solution Prep Schedule	Required By	06/03/96 06/05/96 06/05/96 06/05/96 06/05/96 06/07/96 06/17/96 06/17/96 06/17/96 06/17/96 06/17/96 06/17/96 06/17/96		06/03/96 06/12/96 0
		Final Assign.	102 102 104 108 108 108 1108 108 108 108 108 108 10		Min Max Sat Sun
	Tank Assignment	Inklat Assign.	117 201 201 108 108 108 108 109 109 108 108 109 109 109 109 109 109 109 109 109 109		- ~
1	<u></u>		E E	‡	7 7 8 1 7 8
		35 55		+	120
	110	§ §	110	+	+ +
$\ $	109	250	109	†	+Z+1
	408	2 3	108 108 108 108	1	777
V		Sol <sub>n</sub> .	1 S-0101 2 S-0102 3 S-0103 4 S-0104 6 S-0105 6 S-0106 7 S-0108 9 S-0108 10 S-0113 11 S-0113 11 S-0113 12 S-0113 13 S-0114 14 S-0115 15 S-0113 17 S-0113 18 S-0113 18 S-0113 19 S-0113 10 S-0113 11 S-0113 11 S-0113 11 S-0113 12 S-0113 13 S-0113 14 S-0113 15 S-0113 16 S-0113 17 S-0113 18 S-0113 18 S-0113 18 S-0113 18 S-0113 19 S-0113 10 S-0113 10 S-0113 10 S-0113 11 S-0113 11 S-0113		-
	l				

01 57-



wijhe s

.



.

2102

2104

2106

Man Hour Per Clean Disp. Set Up Sample Uр Material Code Category/Assay **Environmental** 0.5 0.1 0.5 E-1 Temperature 2 0.1 0.5 E-2 0.5 3 Humidity 0.5 E-3 0.5 0.2 Particle Count 4 5 Analytical 6 7 Visual 0.2 0.5 AV-1 0.25 Certificate of Analysis 8 AV-2 0.25 0.05 0.25 Appearance 9 Chemical 10 0.5 0.1 0.5 AC-1 Solubility 0.25 0.25 0.05 AC-2 pН 0.25 0.1 0.25 AC-3 Osmolality AC-4 0.5 0.2 0.5 Water Content (by Karl Fischer) 0.25 Key Element Analysis (by ICP Atomic Adsorbtion Spectroscopy) AC-5 0.25 AC-6 1. GC/Mass Spec **Biochemical** DNA 0.1 0.5 AB-1 0.5 **DNA Fluorochrome Stain** 20 **Protein** 0.5 AB-2 0.5 0.1 Hemoglobin 21 22 23 24 0.2 AB-3 Electrophoretic Profiles by SDS-PAGE 0.25 0.25 0.1 AB-4 A280 AB-5 0.5 0.1 0.5 **Bradford Assay** 0.25 AB-6 Amino Acid Analysis by HPLC 25 0.5 0.1 0.5 Endotoxin 26 27 28 29 AB-7 Gel Clot LAL **Immunological** Al-1 0.1 **ELISA** 1.5 0.2 1.5 AI-2 Western Blots 30 31 Activity 0.1 1 1 AA-1 Chromagenic Substrate Assays 32 33 34 In Vitro Biological VB-1 0.5 0.2 35 Microbilogical 0.5 0.2 VB-2 0.5 Mycoplasma (Barile Method) 36 0.5 0.5 VB-3 0.2 Bacteriophage (Screened) 37 VB-4 0.2 Cell Passage Test 38 2 0.2 Adventitious viral Agents 39 VB-5 0.2 CPE 40 2 0.2 VB-6 41 **BVD** 2 VB-7 0.2 P13 42 VB-8 0.2 IBR 43 Virus Neutralization Titers (9CFR) 44 VB-9 0.2 45 BVD 2 VB-10 0.2 46 P13 VB-11 2 0.2 IBR 47 2 VB-12 0.2 Tritiated Thymidine Uptake in Mouse Cells 48 VB-13 0.2 General Safety Test (Guinea Pigs) 49 50

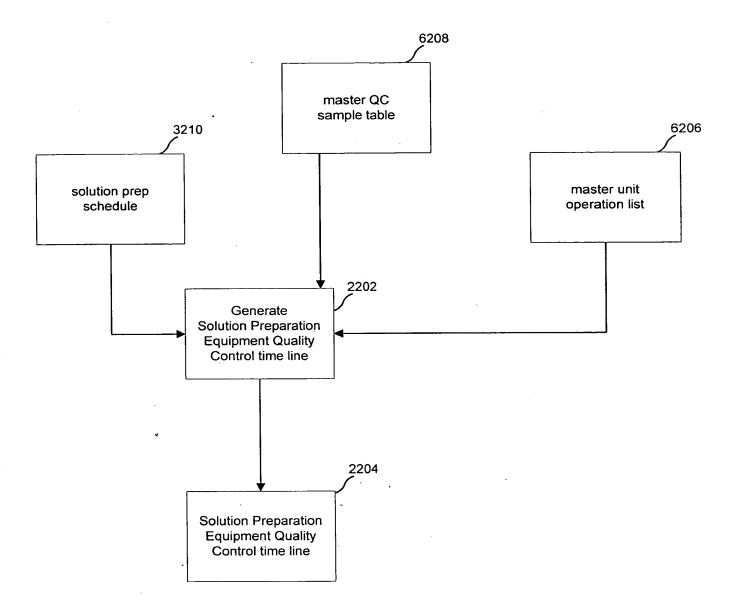
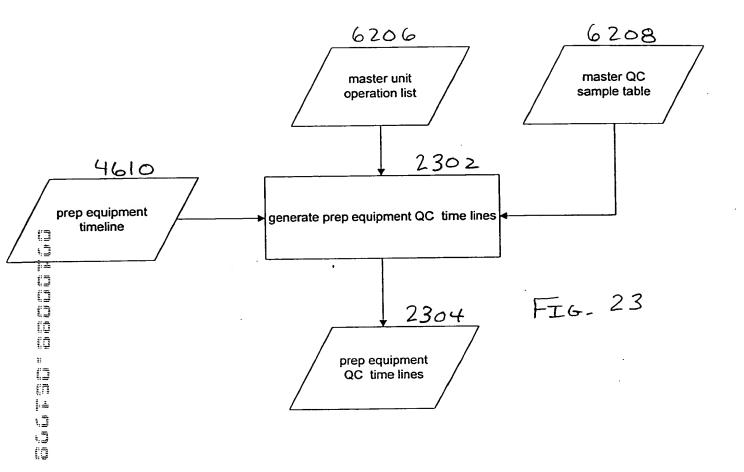
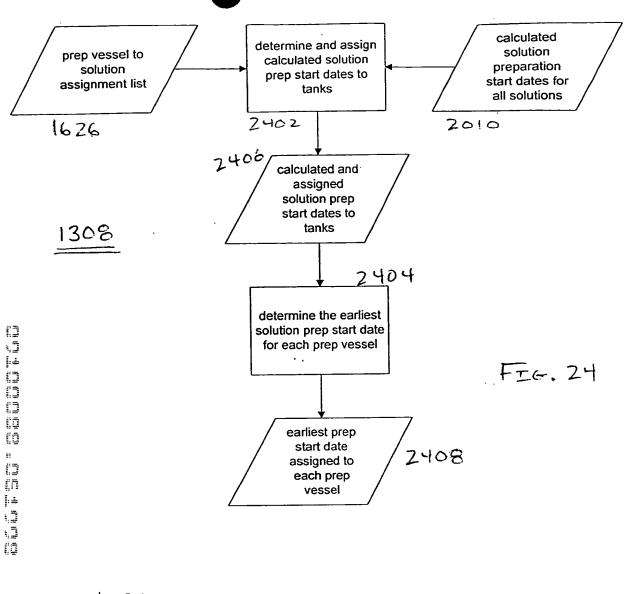
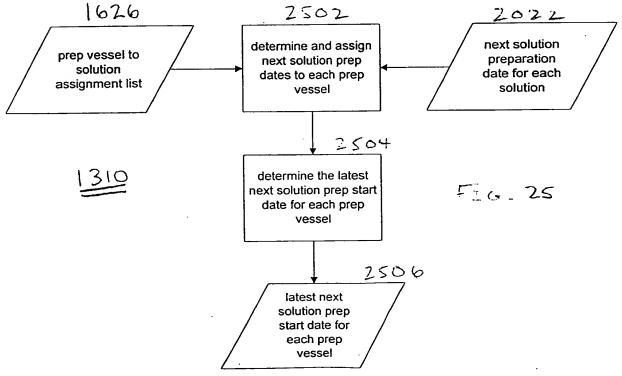


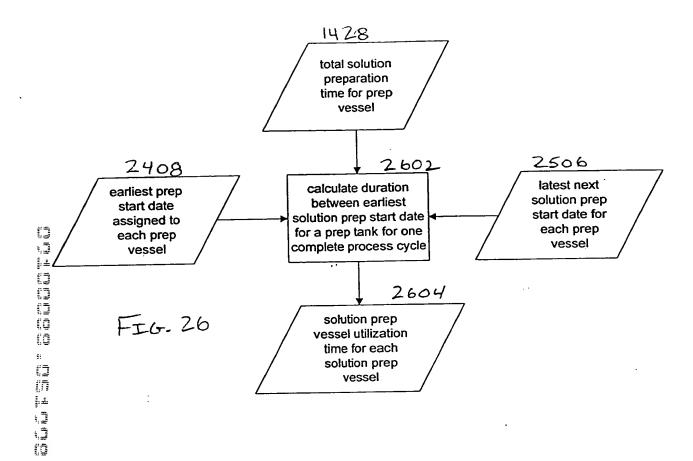
FIG. 22

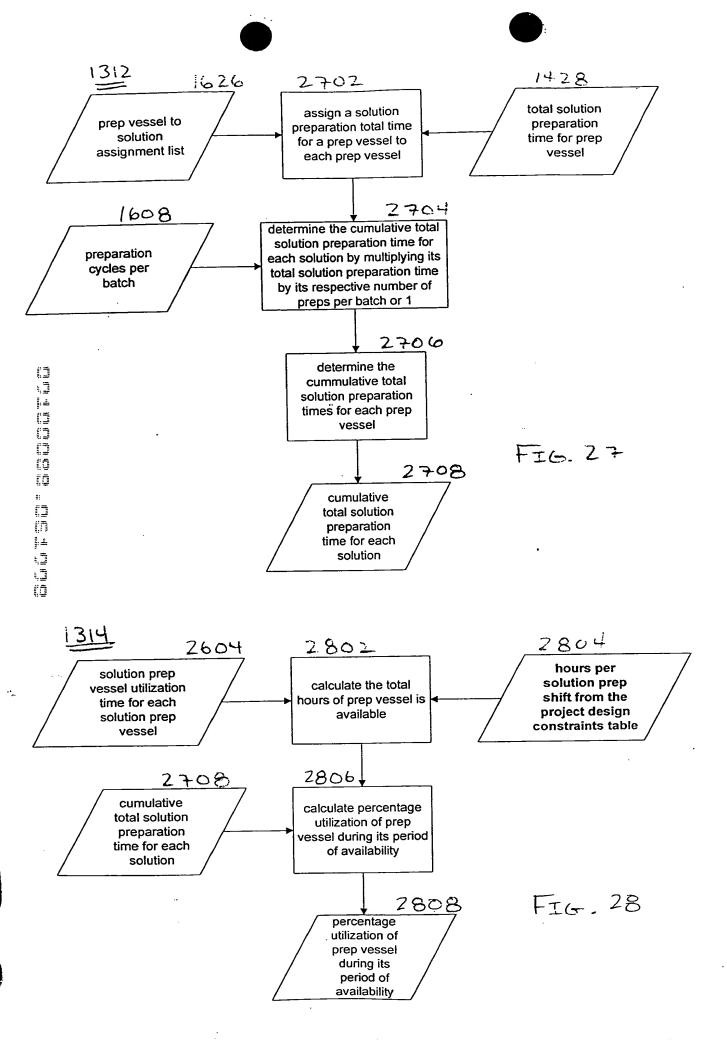


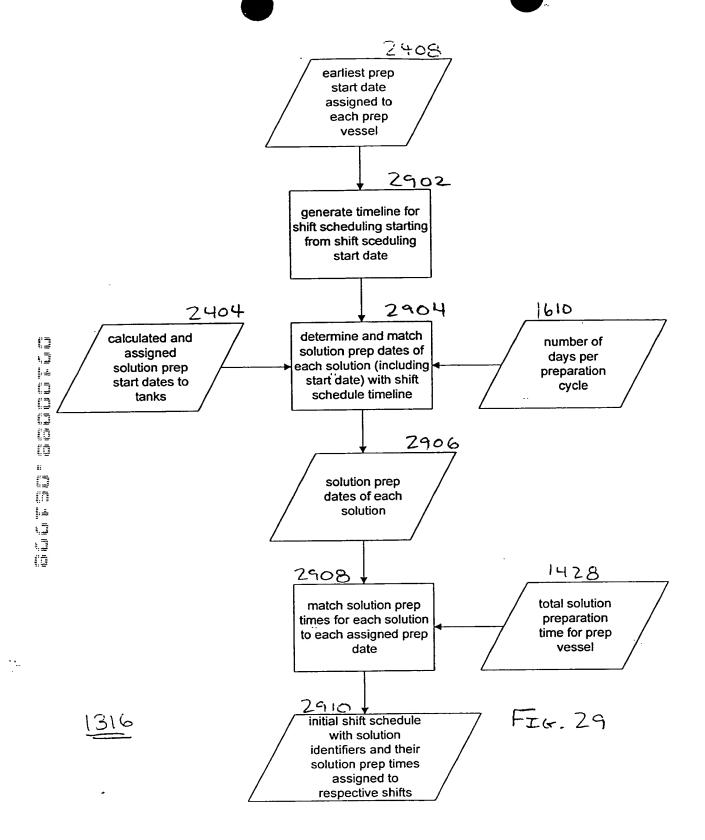


was:









-45**2**2-11

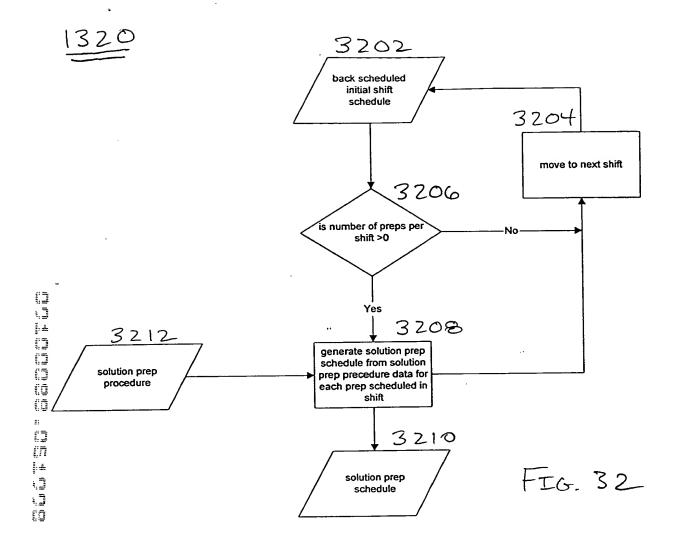
2022

THE REAL PLANTS OF THE THE STATE OF THE STAT

	l	φ	뉙					
İ	89	06/12/96	Oato	08/12/36 06/12/36 06/12/36	06/12/96	06/12/96		
			Ę				°	
	67	08H 1/96	Carbo	06/05/96 06/05/96 06/05/96	06/05/96	06/05/96		
	П		Ę				٥	
	\$	08/10/96	Date	06/05/98 06/05/98 06/05/98 06/05/98	06/02/96	08/02/96		
# <del>-</del>			토			-	٥	
	જ	OGVURIBE	Darte	06/05/98 06/05/98 06/05/98	06/05/96	 06/05/96		
101 12 (1971) 12 (1971) 12 (1971) 13 (1971) 13 (1971) 13 (1971) 13 (1971) 13 (1971) 13 (1971) 13 (1971) 13 (1971)		\$	H <sub>F</sub>				ô	
Vessel 10	ฮ	96708096	Data	06/05/96 06/05/96 06/05/96 06/05/96	96/50/90	06/05/96		
Prep		_	Ĭ.				٥	
hedule - Solution Prep Ve	2	96/2030	Oatha	08/05/96 08/05/96 08/05/96 08/05/96	06/05/96	06/05/198		
edube			Ħ.				٥	
Solution Prep Shift Schedule - Solution Prep Vessel 101 আনু স্কুল্যা অনা দিল্ল গান্ধী দিল্ল গান্ধী দিল্ল গান্ধী দিল্ল গান্ধী	25	9679030	Date	06/05/98 06/05/98 08/05/98 08/05/96	96990190	9602090		
on Pre	Г		£	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3.5	 3.5	21	
Soluti	5	96/10/190	Oate	06/05/88 06/05/88 06/05/88	06/05/38	96/20/80		
	Г		를				0	
	\$	96776790	Data	04/10/96 05/29/96 05/29/96 05/29/96	96,622,90	96/82/50		
		.,	Ę			 	0	
	5	9610136	Date	04/10/96 05/29/96 05/29/96 05/28/96	05/23/96	0573936		9062
7,804	8 Hrs/Duy	9873790	Start	8 8 8 8	96452/50 98/52/50	05/29/86		0,2
( )		3.6	Period	8 ~ ~ ~	7	2		1610
		Usan	$\overline{}$	13.2 1.7 8.3 8.3	22.2	0.0		
							. '	

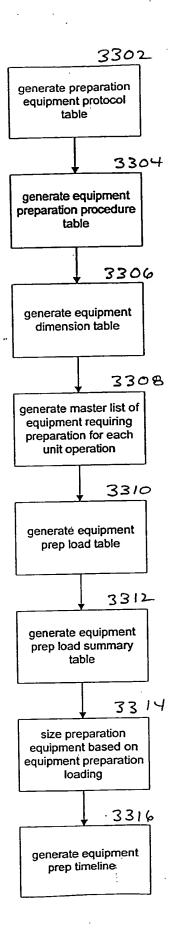
3.5

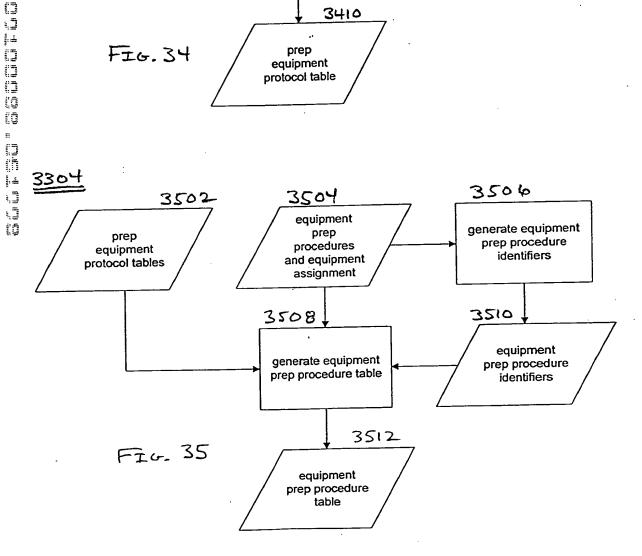
1. C. 3



w.juju

FIG. 33





Prep Equipment Protocol - Bench Sink 3602 / 3604

1	Cycle	Minutes	/Cycle Pre Wash		Detergent	Wash /			Post Wash	Rinse_		Hold/	Total
3	Codec BS-1 BS-2 BS-3 BS-4 BS-5	Load 5 8 8 6 5	NPHW 2	2 2 2 2 2	5 5 5	Alconox Alconox Alconox Alconox Alconox	8	0.5 0.5 0.5 0.5 0.5	2 2 2 2	2 2 2 2 2 2	2 2 2 2 2		20 20 20 20 20 20

the day tank that the man ten that the ten that the tank the tank that the tank the ta

FIG. 36A

Prep Equipment Protocol - Wash Station

	/	/ 3408							· 		7
٠.١	Profocol Cycle Code				Detergen Minutes	t Wash Reagent	Gm/CF	Post Was	n Rinse	Final Rinse	Total
3	WS-1 WS-2 WS-3 WS-4 WS-5	5 5 5 5	2	2 2 2 2 2	6 5 5	Alconox Alconox Alconox Alconox Alconox	0.5 0.5 0.5 0.5 0.5	2 2 2	2 2 2 2 2 2	2 2 2 2 2 2	15 15 15 15 15

FIG. 36B

## Prep Equipment Protocol - Glassware Washer

3408

		Militute	8/Cycle		<del> </del>				7.			
	Cycle		Pre Wast	n Rinse	Detergent	Wash		Post Wash	Rinse	Final		
•	Code	Load	NPHW .	NPCW		Reagent	Gm/CF	NPHW	NPCW	Rinse	Unload	Total
•	GW-1	15	2	2	5	Alconox	0.5	. 2	2	2	10	
- 1	GW-2	15		2	. 5	Alconox	0.5	2	2	2	10	
	GW-3	15	•	2	. 5	Alconox	0.5	2	2	2	10	
	GW-4	15	2	. 2	5	Alconox	0.5	] 2	2	2	10	
	GW-5	15	2	2	5	Alconox	0.5	2	2	2	10	l '

FIG. 36C

Prep Equipment Protocol - Gla	ssware Dryer
-------------------------------	--------------

	Cycle Code	Load	Heat Up Minutes	Dry Temp (C)	Minutes	Cool Minutes	Unload	Total
2 3 4	DO-1 DO-2 DO-3 DO-4 DO-5	10 10 10 10 10	30 30 30 30 30		40 25 25 25 25	30 30 30 30 30 30	10 10 10 10 10	12 10 10 10

:

the the test that the test be the tast

ting that had the mile that

FIG. 36D

## Prep Equipment Protocol - Carboy Washer

/·	34 <sup>0</sup> 8							<del></del>	<u> </u>		
1.55.7	Minutes/	Cycle	<u> </u>			<del></del>		<del></del>			
· ' )		Pre Wash F	Rinse	Detergent			Post Was	h Rinse	Final Rinse	Unload	Total
,	Load	NPHW	NPCW	Minutes	Reagent	Gm/CF	NPHW	NPCW	Kilisa	010000	
)(umn	15 16 15 15 15	2 2 2 2	2 2 2 2 2 2 2	5 5 5 5	Alconox Alconox Alconox	0.5 0.5 0.5 0.5 0.5 0.5	2	2 2 2 2 2 2 2	2 2 2 2 2 2 2	15 15 15 15 15 15	15 15 15 15
dern dern od dern dern dern dern dern der		:			FIG	 30	ō E				

134	00
#	$\neg$

 	/						
Cycle Code	Load	Heat Up Minutes	Dry Temp (C)	Minutes	Cool Minutes	Unload	Total
1 CD-1 2 CD-2 3 CD-3 4 CD-4 6 CD-6	10 10 10 10 10	30 30 30 30 30	260 260	40 25 25 25 25 26	30 30 30 30	10 10 10 10 10	100 85 85 85 85

FIG. 36F

dille

		-	-							. •					
	数 ろ く	+	\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	+	下			626					55.3		
	Press.	Minutes	Minules To Hold	No. of Cycles	Subt	Press.	Minutes To Ach.	Minutes To Hold	No. of Cycles	Sch	Press,	Minutes To Ach.	Minutes To Hold	No. of Cycles	Subt.
Load					20					20			•		8.
Pre Sterlization Deep Vacuum Vacuum/Steam Pulse		15	-		16							e	G		
Vacuum Steam Subtozi					\$		n 4			8 8	-	. 4			81 84
Sterlization Steam Steam/Air	•	20	40		9	-	20	40		99	-	8	04	<u>.</u>	69
Subtotal					8		·			8					
Cooling Direct Air Cooling Indirect Jacket Cooling	. 0	. 40	0	<del></del>	40	0	40	0		. 6		6 4		0.0	4 4
Overpressure Subtotal	-				40					\$	·				
ying Fast Exhaust		20		· vo	1 25					·		20		. 107	1 25
Slow Exhaust Deep Vacuum		<del></del>						••							-
Vacuum Puise Heat								3			5				
Heated Pressure Subtotal											· 8 ·		·		22
29 30 Unload			  -		2	6	<u> </u>		_	7	20		·		20
			1	1	464			1	-	195	9				230
Total Minutes			_	_	2										_

FIG. 36G

ı	Cycle		Heat Up	Sterilizatio	ח	Cool		
	. Code	Load		Temp (C)	Minutes .	Minutes	Unload	Total
_		15	30	250	40	30	. 15	130
	SO-1	15	30		. 25	30	15	11
	SO-2	15			25	30	15	11
	50-3	15		1 .	'	30	15	11
	SO-4 SO-5	15	1			30	15.	11

FIG. 36 H

O.	9	3702	Liche	quipinei		201 240	.p.mont	3	104	_	
	1	8		EPC1	EPC2	EP'C3	EPC4	EPC5	EPC5	EPC7	<u>-</u> ډ
^				-		<b></b>					_
1		1 Initial Ringe	'	1		·	1		1	1	
		A Darah Clair d		1	]				1		
		4 Procedure		BS-1	BS-1	BS-2	BS-1				
1		5 Duration :	PHrs.	0.33	0.33	0.33	0.33		1		
- 1		6 Hold/Dry	PHrs.	0	0	0.33	0.33	0.00	0.00	0.00	
- \		7 Subtotal 8 Cummulative	PHrs.	0.33	0.33	0.33	0.33	0.00	0.00	0.00	
1		8 Cummulative	Prus.	. 0.33	1 0.35	1.0.2	0.50	0.00	1 5.55	1 555	i
1	1		1		1	1			1		
l	1		.		1	1 .	1	WS-1	WS-1	1	
- 1	1:1		PHrs.	1	J		1	0.25	0.25	•	
}	1:		PHrs.	1	1	1			اممد		ı
- 1	1	( )	PHrs.	. 0.00	0.00	0.00	0.00	0.25	0.25	0.00	1
- [	1 7		PHrs.	0.3333	\$ 0.3333	103333	0.3333	'  "	"	1 "	
- /	1			1	+	1	<del> </del>		1	1	1
: /·	1										1
1	11	Bench Sink - 1		1 .		1 .	l		i	1	ı
•]	20	•	l	BS-3	BS-3	BS-4	1			ł	Í
4	2	1	PHrs.	0.33	0.33	0.33		1	1	ļ	١
Ĩ	2:		PHrs.	1		1	0.00	0.00	0.00	0.00	1
Ì	24		PHrs.	0.33	0.33	0.33	I .	•	0.00	0.00	ı
fadt fant fant fant fant	2/		Priis.	0.00007	10.00007	10.00007	0.5555	"	"	"	1
1	26	· · · ·	1	1	1	1	1.			1	ı
<i>}</i> ŧ	27			1	1		GW-1			1	1
Ē	28		PHrs.	1	1		0.67	1	1		1
	29	1	PHrs.	1			0.07	0.00	0.00		Į
Ì	31		PHrs.	0.00 0.66667	0.00	0.00	0.87	0.00	0.00	0.00	I
	32		Filia.	0.0000	0.0000	0.0000	'		1	"	Ĺ
<u> </u>	33		1	ł	i	}	ĺ	1			ı
- =	34	Procedure - Professor	[	GD-1	GD-1	GD-2	GD-3		ł		ı
	35		PHrs.	2.00	2.00	1.75	1.75	ł	l		l
É	36		PHrs.	200	2.00	1,75	1.75	0.00	0.00	0.00	Į
1	38	Subtotal Cummulativo	PHrs. PHrs.	2.00 2.66667		2.41687	2.75	0.00	0.00	0.00	l
1	39	Carmotatvo		2.00007	2.0000	2.4100.	20	_			l
}	40	Carboy Washer - 1	1						ł	1	۱
1	41	-Procedure Transco	1	1	1	]		CW-1	CW-1	1	١
}	42	Duration	PHrs.		}	[ ]	1	0.25	0.25		l
٩.	- 43 44	Hold/Dry	PHrs.	1		0.00	0.00	0.25	0.25	0.00	İ
1	45	Subtotal Cummulative	PHrs.	0.00 2.66687	0.00 2.66687	2.41667	2.75	0.25	0.25	0.00	ı
A I	46	00.111.10.2540	"""	2.0000.	2.00007	2.41007			120	_	ı
1	47	Carboy Dryer - 1			İ						l
	48	-Procedure Variation					1	CD-1	CD-1		l
- U	49	Duration	PHra.				1	1.67	. 1.67		
У	50 51	Hokl/Dry Subtotal	PHrs.	0.00	0.00	000	0.00	1.67	1.67	0.00	
ı	52	Cummulative	enH9. EnH9.	0.00 2.66667	0.00 2.66667	0.00 2.41667		1.91687	1.91687	0.00	
ļ	53										
ı	54	Ргер									
1	55 56	Storie-			_ [		_	,	2	_	
- 1	67	Steffing		2	2	2	2.	2	-	2	
- [	58	Preassembly	1	i		· 1	ſ	ļ	- 1	ſ	
.	59		MHrs.	·	1	1	- 1	. ]	ł	·j	
- 1	60	Procudure Hours	- 1	- 1	0.5	. 1	- 1	ı	- }	1	

-Prep-Equipment Protocol - Equipment Prep Procedures

FIG. 37A

Prep Equipment Protocol - Equipment Prep Procedures

			EPC1	EPC2	EPC3	EPC4	EPC5	EPĈ6	EPC7
61	Cummulative	PHrs.	2.68687	3.16687	2.41687	2.75	1.91667	1.91687	0
62 63 64 65 66	Wrap Man Hours Procedure Hours Cummulative	MHrs. PHrs.	1.5 0.75 3.41667	1.6 0.75 3.91667	1.5 0.75 3.16687	1.5 0.75 3.6	1.5 0.76 2.66687	1.5 0.75 2.68687	1.5 0.76 0.75
	Sterilization	1			:				
69 70 71 72 73 74 75	Autoclave - 1 Procedure Duration Hold/Dry Subtotal Cummulative	PHrs. PHrs. PHrs. PHrs.	SS-1 2.68 2.68 6.10	SS-1 2.68 2.68 6.60	SS-1 2.68 2.68 5.85	SS-1 2.68 2.68 6.18	SS-2 3.25 3.25 5.92	0.00 2.67	SS-3 3.83 3.83 4.58
76 77 78 79 80	Dry Heat - 1 Procedure Hours/Load Hold/Dry	PHrs.						SO-1 2.17	
81 82	Subtotal Cummulative	PHrs. PHrs.	0.00 6.10	0.00 6.60	0.00 · 5,85	0.00 6.18	0.00 5.92	2.17 4.83	0.00 4.58
83 84	Total		6.10	6.60	5.85	6.18	6.17	5.08	. 4,58
85 86	Max		2.68	2,68	2.68	2.68	3.25	2.17	3.83

the control of the co

gener.

FIG. 378



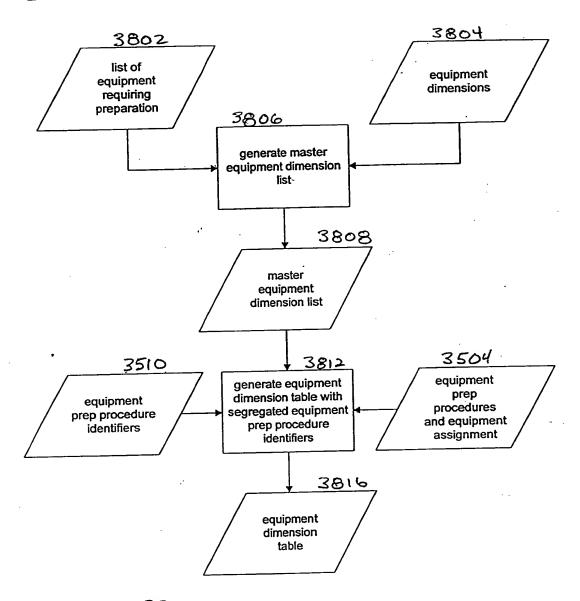


FIG. 38

4.00



'n

÷	_	T	_	Т	12	2.2	r T	75	1067	7			<u>ر</u>		
Ì	1	чг		$\downarrow$	ļ					1	<u> </u>	- ,	3922		
	1	Tanian S	3	$\dagger$	F		2	Š	1. 8		-	,	•		
20			-	+	1	<u> </u>		J	10.67	K			် ဝ		
			3	4	Ţ	==	2			K	_	- }	3420		
*		8	2	+	ſ	= =	<u>.</u>	100	3 8	$\ $		- (			
\$2 \$2	1		100	1	+	•	Ę	1	핂	ß			3918		
7,		5	AL LA		-	<del>, ,</del>	ю	ĺ	8	<b>\</b>	-	- 1	ന്		
Š	+	Figure Noting Small Charmens PP Curboys	Smeti I area   Small   Mardetti   (il),   201,		-	<del>.</del> .	2		मु	K			3916		
		45.50	2	+	-	<u> </u>	•		<u>. ਜੂ</u>	I(		-	ň		
	Ŀ						n	İ	B	K	1		7		
		Ruttber Steppers	1		Н	~ ~	P	L	* 8	1	_	_	3917 3914		
	-	Retto	1		Ц	9 8	N	1		┦,			•		
		ę	ľ				_	١	2 g		<b>{</b> .	_	91)	<u> </u>	
8	3	Participan I							₹ <u>8</u>				برتم	)	
	T			1			<u>. 7</u>		= g		1				
			f		t			1	2 <u>ā</u>	1					
				5						4			$\sim$		
				Teen Glooms Crosses Reducers Moss Beins Carries Similar Street		۴	4 (4	١	× 50.			م	3910		
ŀ			Ì	ž g	+	0.	<del>4 6</del>	-	88	1	(		( · )	-	
			ļ	2 2	-	-	N 4	4	ងង	-					
				Š	1		N -					•			•
		1	. 48	į			_		\$ 3.		J				
				De pri Probe	I	1	~ =		2 g		1		•	3,08	
				Prote	1	1	<del>- 2</del>		88	٦	1	> -	_	200	
	,		mstruments	PI 00Pm	1	-	<del>~ ~</del>	_	3 B	4	١		C	, J	
-	EPC-1	L	Ę	<u>-</u>	+	+	<del></del>	_	0 80	-		,			
1	A			l	ļ										^
1			Ę	Tuber	1	T	<u>и й</u>		8 8		1				3010
	<u>ئ</u>	L	Special Special	Sphen Tubes	1	1			<u>                                     </u>		5	-		3	J
						i i	9 <del>9</del>						١,		
-			_		_	N. hone	2 TB hones 3 TB hones	-	<u> </u>				(		
L	_			_	_1	<u>.</u>	_	_		<u>-</u>	I		7	)	
							Ī	(				-	7766	2	

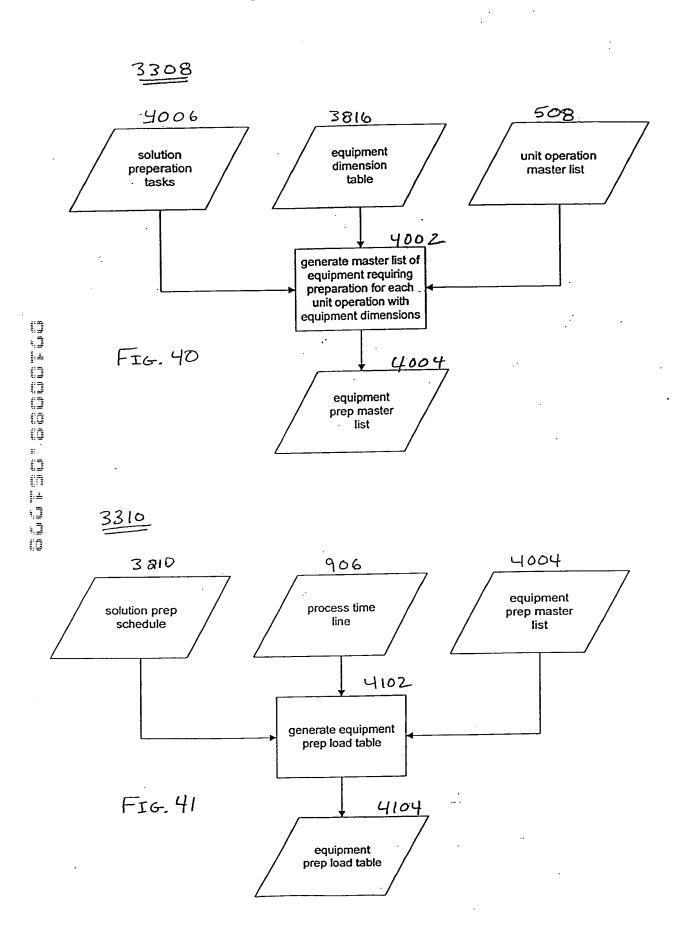
FIG. 39

:

Ì

rake

----



	EPC-3	Plasticware	Beakers 0.03																·							
-	ш	Total		†	89	8	0.0	0:20	0.22	0.31	8	0.0	8.	0.50	0.31	0.31	0.00	0.00	0	0.50	0.31	0.34	8	99	89	0.0
			Clamps 0.01					0.17	0.08	0.08				0.17	0.08	0.08				- 2	0.0	0.08				
		1	Hose Barbs 0.01					0.03	0.03	<b>→</b> 80.0				0.03	0.03	0.03				0.03	0.03	0.03				
			Reducers H 0.01					0.03						0.03	·					0.03						
90	•		Crosses 0.08											·						_						
4208			Elbows 0.02																	6 7	<del>4</del> -	• -				
		Fittings	Tees 0.03			*		0.17	0.11	0.11				0.17	0.11	0.11				0.17	4 t	0.11				
oad Table			pH Probe 0.08																							
Equipment Prep Load Table		sing sing	DO Probe 0.08																	4	<b>8</b> 6					
Equipm	500	Instruments	P.I 0.03					4 1	8	0 3	0	0	0	0.111	0.083	0.083	0	0	0	0.111	0 3	0.083	0	0	0	0
		L	Total		•	0	0	l°		L																
4506	-																									
<del></del>		EPC-1	Siphon Tubes											,												
4504	-		٩	1	02:30 PM	01:30 PM	03:30 PM	12:00 PM	01:00 PM	11:51 AM	02:30 PM	01:30 PM	03:30 PM	09:00 AM	10:00 AM	08:51 AM	02:30 PM	01:30 PM	03:30 PM	10:00 AM	09:00 AM	08:51 AM	12:15 PM	09:33 AM	09:51 AM	10:09 AM
$\tilde{\beta}$		1	Date Time		06/04/98	06/02/96	98/90/90	06/07/96	96/0/90	96/20/90	06/06/98	96/20/90	08/08/98	98/60/90	96/60/90	98/60/90	06/08/98	96/60/90	06/10/98	06/03/96	06/11/98	06/11/96	06/11/96	06/11/96	06/11/98	06/11/98
102h		7 7 7	e He		1 Inoculum Prep	2 Flask Growth	3 Seed Fermentation	4 Fermentation	5 Heat Exchange	6 Cont Cent/Solids	1 Inoculum Prep	2 Flask Growth	3 Sood Formontation	4 Fermentation	5 Heat Exchange	6 Cont Cent/Solids	1 Inoculum Prep	2 Flask Growth	3 Seed Fermentation	4 Fermentation	5 Heat Exchange	6 Cont Cent/Solids	7 Cell Resuspension	8 Heat Exchange	9 Cell Disruption	10 Heat Exchange
	Ļ		<u> </u>		<u> -</u>	74	n	4	ω	<b>છ</b> .	-	8	n	4	<u>φ</u>	<u>®</u>	<u> </u>	174	163		1		<u> </u>			<u> </u>

The property of the transfer o

:-

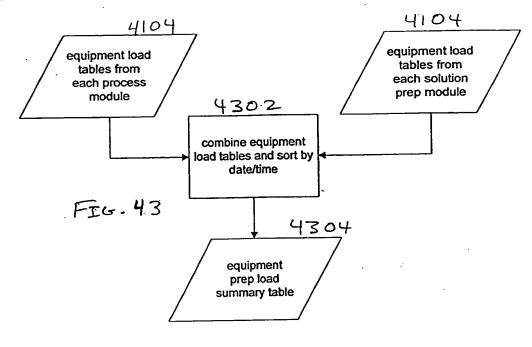
Equipment turns			÷.					·											
Equipment times         Unit Oper Each Times         Fight of Case PM         Total Section of Case PM <td>-</td> <td></td> <td></td> <td></td> <td></td> <td>ָּבַּוּ נוֹ</td> <td></td> <td><b>E</b></td> <td>13</td> <td></td> <td>· 引之!</td> <td>4</td> <td></td> <td>, 1</td> <td>I -</td> <td></td> <td>T /</td> <td>و آ</td> <td></td>	-					ָּבַּוּ נוֹ		<b>E</b>	13		· 引之!	4		, 1	I -		T /	و آ	
Equipment thoms         Controller         Co			•			- /					1	ŀ		$\downarrow$			$ \downarrow$		ſ
Equipment flums         Unit Oper End Time         London Signature Signatu										EPC4		<u> </u>	ઝુ			EP &	.	f	
Equipment lange         Date of Type (Controlled Preparation)         Type (Controlled Preparation)         Controlled Preparation         Controll		Unit Oper En	d Time		Rubber Sto		lexible Tubli	e e	Total	Small Glass	,	<u>=</u> I	8 2	- I-	Total	BSG C.	arboys 20L		la L
Time-culum Prep   00004099   00230 PM   0020   00	Equipment Items	Date	Ттте	Flasks 0.25	Slicone 0.00	Butyl 0.03		Neoprene 3.33	5	0.03125						1.3333		$\overline{}$	
2 Flask Growth         GelGGBB         01:30 PM         0.02         1.25         1.05         1.05         1.05         1.05         0.00	1 Inoculum Prep	06/04/96	1						9		125	1.25	1	-	99	<u> </u>			0.00
5 Sade Fermination         COCODER         CASO PM	2 Flask Growth	08/02/88							8 8		1.25	1.25			0.0	0			0.00
6 Heat Exchange         Cool/1968         13.5 Heat Exchange         1.35 Heat Exchange         1.35 Heat Exchange         0.007/86         1.35 Heat Exchange         0.007/86         0.00 <td>3 Seed Fermentation</td> <td>06/06/96</td> <td></td> <td></td> <td>0.02</td> <td></td> <td>1.33</td> <td></td> <td>1.35</td> <td></td> <td>1.00</td> <td>-</td> <td></td> <td></td> <td>o ŏ</td> <td>0</td> <td></td> <td></td> <td>0.0</td>	3 Seed Fermentation	06/06/96			0.02		1.33		1.35		1.00	-			o ŏ	0			0.0
6 Feat Exchange         Cod/7/96         OTOO PM         COD         COD <td>4 Fermentation</td> <td>96/20/90</td> <td></td> <td></td> <td>40.0</td> <td></td> <td>1.33</td> <td></td> <td>1.35</td> <td></td> <td></td> <td>0</td> <td>5.33</td> <td></td> <td>5.3</td> <td>8</td> <td></td> <td></td> <td>0.0</td>	4 Fermentation	96/20/90			40.0		1.33		1.35			0	5.33		5.3	8			0.0
6 Cont. Card/Solids         0607769         1151 AM         0.00         0.00         1.26         1.26         0.00         0.00           2 Flask Growth         0600569         02:30 PM         0.00         1.26         1.26         1.26         0.00         0.00           2 Flask Growth         0600569         03:30 PM         0.00	6 Heat Exchange	06/07/98	1						0.00			-	-		ê	0	_		0.00
1 Inconlum Prop         06/05/06         02:30 PM         0.00         1.25         1.25         0.00         0.00           2 Flask Growth         06/05/06         07:30 PM         0.00         1.25         1.25         0.00         0.00           4 Farmwitztion         05/06/06         05:30 PM         0.00         0.00         0.00         0.00         0.00           6 Float Exchange         05/06/06         05:00 AM         0.00         0.00         0.00         0.00         0.00         0.00           6 Cont. Centrisolids         05/06/06         05:00 AM         0.00	6 Cont Cent/Solids	06/07/98							0.00			0	-	_	8	٥	_		8
2 Flask Growth         C6/07/68   O1:30 PM         0.00         1.55   1.25   1.25   0.00         0           4 Farmentation         O8/08/98   O3:30 PM         0.00	1 Inoculum Prep	96/90/90	1						0.00	•	1.25	1.25	$\dashv$	_	8	او			000
3 Seed Fermentation         05/06/96         05:30 PM         0.00 <t< td=""><td>2 Flask Growth</td><td>96/20/90</td><td>1 _</td><td></td><td></td><td></td><td></td><td></td><td>0.00</td><td></td><td>1.25</td><td>1.25</td><td>-</td><td>_</td><td>8</td><td>g</td><td>_</td><td></td><td>0.0</td></t<>	2 Flask Growth	96/20/90	1 _						0.00		1.25	1.25	-	_	8	g	_		0.0
4 Fermentation         06/09/98         08:00 AM         0.00         0.0	3 Seed Fermentation	06/08/98	1						0.0			0	-	-	8	8	_		0.00
6 Hoat Exchange         05/00/08         10:00 AM         0.00         0.	4 Fermentation	96/60/90	i .						0.00			0		_	8	8			0.00
6 Cont. Cant/Soilds         06.09/96         06.55 f AM         0		98/60/90	ł	_					0:00			0		_	ö	8	_		0.00
06/08/98         01:30 PM         0.00         1.25         1.25         1.25         1.25         0.00		96/60/90		_					0.00			0	-		-  -  -	8	_		000
on         06/109/86         01:30 PM         0.00         1.26         1.25         1.25         0.00	1 Inoculum Prep	06/08/98	1 .	-	_				0.00		1.25	1.25	-	_	ŏ	8			0.00
on         06/10/98         03:30 PM         0.00	2 Flask Growth	96/60/90	1						0.00		1.25	1.25			ŏ	8			0.0
06/03/96         10:00 AM         0.00	3 Seed Fermentation	06/10/96	1	~					0.00			•		$\dashv$	ĕ	8	_		0.00
CB/11/98   OB:51 AM   OB:51 AM   OB:51 AM	4 Fermentation	06/03/96	1	V					0.00			0		$\dashv$	ő	8			99
S	6 Heat Exchange	06/11/96		V					0.00			٥		$\dashv$	ö	8	_		9
Ion         06/11/98         12:16 PM         0.00	6 Cont Cent/Solids	06/11/96	1	5					0.0			٥		$\dashv$	<u> </u>	8	_	$\perp$	8
06/11/86         08:33 AM         0.00         0.00         0.00           06/11/86         09:51 AM         0.00         0.00         0.00           06/11/86         10:09 AM         0.00         1.25         1.25         0.00	7 Cell Resuspension	08/11/96	1_	5		-			0.0			٥		+	<u> </u>	8	_	_	8.0
06/11/86 09:51 AM 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	8 Heat Exchange	06/11/90		2					0.0	- 6		٥	-	-	<u>-</u>	8	4	_	99
08/11/96 10:09 AM 0:00 1.25 1.25 0:00	9 Cell Disruption	06/11/90	1	>					0.0				$\neg$	$\dashv$	9	8	+	$\perp$	8
	10 Heat Exchange	06/11/9	1	≥					0.0	0	1.25				Ö	8	_	_	8

				4218	Equ	Equipment Prep Load Table	Load Table	4220	0						
			000		EPC.	9	\								EPC3
	Linit Oper En		Specialty Glass		That			Fittings						Total	Plasticware
Equipment Items	Date		Siphon Tubes	Total		PI DO Probe 0.03 0.06	pH Probe 0.06	Tees 0.03	Elbows 0.02	Crosses 0.08	Reducers 0.01	Hose Barbs 0.01	Clamps 0.01	ს_	Beakers 0.03
		H			Н										
8 Heat Exchange	06/11/96	10:27 AM			0									0.00	
9 Cell Disruption	06/11/96	10:45 AM			0									0.00	
10 Heat Exchange	06/11/96	12:00 AM			0									0.00	
8 Heat Exchange	06/11/98	02:21 PM			0									0.00	
9 Cell Disruption	06/11/98	02:39 PM		:	0									0.00	
10 Heat Exchange	06/11/98	02:57 PM			0									0.00	
11 IB Resuspension	06/11/98	10:57 AM			0									0.00	
12 Centrifugation	06/11/98	11:33 AM			0									9.0	
11 IB Resuspension	06/11/96	03:06 PM			0									0.0	
12 Centrifugation	08/11/98	03:12 PM			-									0.0	
13 Renaturation	06/12/96	08:43 AM			•									9.	-
14 Buffer Exchange	06/12/96	11:47 AM			-								_	0.0	
16 Clarification	06/12/96	11:03 AM			0		<u> </u>							9.0	
16 Chromatography 1	06/12/96	03:59 PM			0									8	
17 Chromatography 2	06/12/98	08:59 PM	=		0									8.	
18 Buffer Exchange	06/12/98	08:27 PM	~		0									0.0	
19 Chromatography 3	06/12/96	10:07 PM	V		-									0.0	
20 Buffer Exchange	06/12/98	10:38 PM	5		-							-		8	
21 Chromatography 4	06/13/96	12:14 AM	V		0									0.0	
22 Sterile Filtration	06/13/96	3 12:48 AM	5		0									8	
Totals					-								_	3.26	
, lowing															

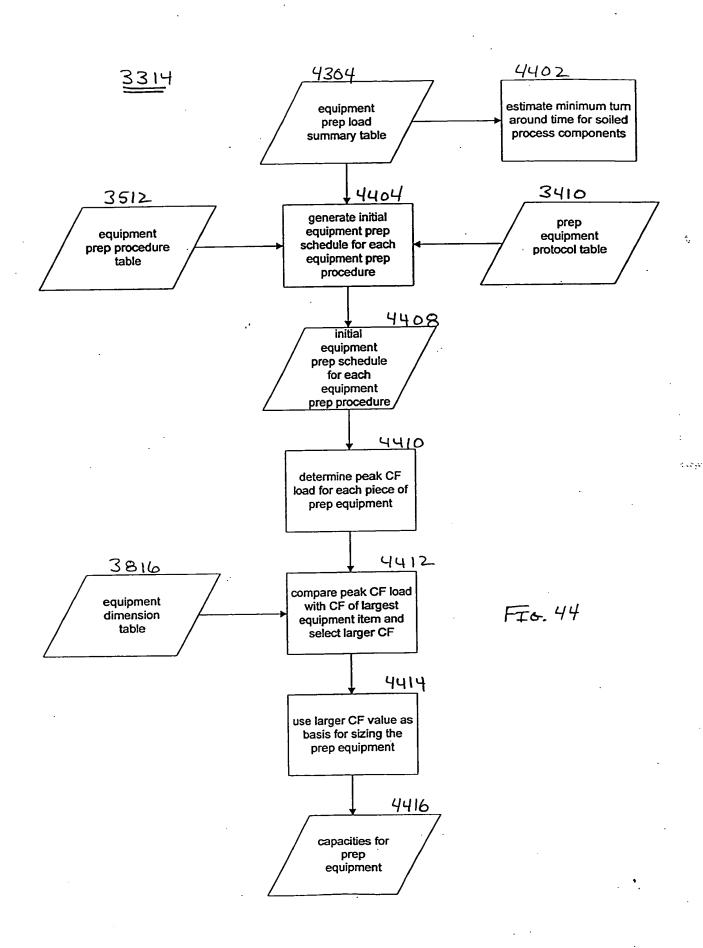
;'~

		· .		.5	122		4 Z. Z. J Equipment. Top.koad.Table	Load.	Table	77	74			7.	4226		75	4228
									FPC4	\		EPC-5			Ğ	EPC.6		
	1 Init Oper End	92		Rubber Stoppers		Flexible Tubing	guj		Small Glassware		Total	PP Carboys		Total		쳤	ļ	Tola
Equipment Items	Date		Flasks 0.25	Silcone 0.00	_ g	Silicone 0.33	Neoprene 3.33	S.	Beakers - 0.03125	cs 25		10L 1.3333	20L 46 4.88 10	45L 10.7		10L 20L	20L 45L 4.88 10.7	
										T			+	+	+	+	+	+
8 Heat Exchange	06/11/86	10:27 AM						0.00			9	$\dashv$	$\dashv$	귀	000	$\dashv$	$\dashv$	9:0
9 Cell Disruption	06/11/98	10:45 AM						0.00			8		$\dashv$	귀	0.0	$\dashv$		0.0
10 Heat Exchange	06/11/98	12:00 AM						0.00		1.25	1.25			-	0.00	-	-	0.00
8 Heat Exchange	06/11/90	02:21 PM						0.00			0			-	90			89
9 Cell Disruption	06/11/98	02:39 PM						0.00			٥		-	-	89			0.00
10 Heat Exchange	06/11/96	02:57 PM						0.00		1.25	1.25		$\dashv$	$\dashv$	0.0	-		0.0
11 IB Resuspension	06/11/96	10:57 AM						0.00			٥		$\dashv$		0.00			0.0
12 Centrifugation	06/11/98	11:33 AM						0.00			٥				0.0		_	0.0
11 IB Resuspension	06/11/96	03:06 PM						0.00			0				0.0			0.00
12 Centrifugation	06/11/96	03:12 PM						0.00			0				8			0.0
13 Ronaturation	06/12/98	08:43 AM						0.00			0			-	90.0	$\dashv$	-	0.00
14 Buffer Exchange	06/12/98							0.00		,	0			$\dashv$	0.0		_	0.0
15 Clarification	06/12/98							8			٥		$\dashv$	$\dashv$	0.0		$\dashv$	0.0
16 Chromatography 1	06/12/98							8			0		_	$\dashv$	0.0			0.0
17 Chromatography 2	06/12/96							0.00	·		٥			$\dashv$	0.00			0.00
18 Buffer Exchange	06/12/98							0.00			٥				0.0		_	0.00
19 Chromatography 3	06/12/96	10:07 PM						0.00			٥				000	_	$\dashv$	0.00
20 Buffer Exchange	06/12/96	10:38 PM						0.00			0				0.00			0.00
21 Chromatography 4	06/13/98	1						0.00			0				000			0.00
22 Sterlie Filtration	06/13/98	12:48 AM						0.00			•				000	1	$\dashv$	0.0
Totals														1	$\dashv$		-	$\dashv$

4 22 July 1 Gauspments Top-Load Jable ... Gauspments Top-Load Jable ... Gauspments Top-Load Jable ...



1927...2



	_		_	-	_			T -				_	Т	Т			_			Г	Т				_	Т	Т							_
			Ş.	AA-1							_		L								1					_	_							
			$\neg \vdash$	AI-2		_																				$\perp$	┸							
			Immulogical	AF:																														
		-	=					$\dagger$	$\dashv$				+	1						T	1			n										
			H	6 AB-7	$\vdash$			╀					+	+		_				╁	+				_	$\dagger$	+						T	
			-	AB-6	L			+					╁	$\dashv$						╀	╁					╁	╅	_			$\neg$		╁	_
				AB-6	L			1	_				+	-						╀	+					╬	+						╀	
				AB.4				_					_							╀	$\downarrow$			ອ		+	$\dashv$						$\vdash$	
٩	Ì			AB3						-							_			l		`	,			_	$\perp$					_	$oxed{\bot}$	
405H	· · · · · · · · · · · · · · · · · · ·		2	AB-2																													L	
5	14	`	Blochemical	AB-1	T			T												T														
	and and and and and	ŀ	╗		$\dagger$			十					+	1						T														
		İ	ŀ	A AC-6	╀			+		-		_	$\dashv$	$\dashv$					<u> </u>	$\dagger$	十	-				$\dashv$	7						T	
	1		ŀ	AC.6	╀			+				_	$\dashv$	$\dashv$						+	-					$\dashv$	-+					T	$\dagger$	
ela B	the test that the December that			AÇ 4	1			$\perp$		_			4							+	$\dashv$					$\dashv$						-	╁	
QC Load Table - PE Module	(,T)			AC				$\perp$		_			$\perp$	_						1				_		$\dashv$	_					-	+	
9 - PE			-E	AC-2																1	_					4	_				<u>.</u>	_	1	
I Tabl	13 10		Chemical	AC-1																												L		
Load		ample		AV-2	1												6	١						1							_		$\perp$	
ğ		QA/QC Samples	Visual	AV-1	1			$\top$		T	·																							
	ŀ	3	_5	-¥	+		P.W.	Z 2		一	P.	02:30 PM	Z.			12:30 PM	01:30 PM	11:00 AM	11:30 AM 12:30 PM	03:30 PM			10:00 AM	08:00 AM	09:00 AM	12:00 PM			08:30 AM	10:00 AM	11:00 AM			09:00 AM
				11me			12:30 PM 03:30 PM	02:30 PM					01:45 PM							- 1					_							Ι.	1	
: h0			Ę				96/03/96	06/04/96			06/04/96	08/04/98	06/02/96			98/50/90	06/05/96	3/06/96	96/90/90	3/06/98			96/90/90	96/20/9	8/07/96 8/77/98	06/07/96			06/07/96	96/20/9	08/0/080	20/0/0		96/20/90
05 h	.\		Finish		-					┞												_											+	
				9	08:00 AM		09:30 AM 12:30 PM	03:30 PM			12:30 PM	1:30 P	01:30 PM			11:30 AM	12:30 PM	10:30 AM	10:30 AM 11:30 AM	12:30 PM			09:00 AM	11:00 AM	08:00 AM	10:00 AM			08:00 AM	09:00 AM	10:00 AM	3		08:00 AM
				ւ ⊢։					<u> </u>	╁					-					_		H			08/07/96			$\vdash$		98/1/99			†	96/0/90
			Start	ate	96/03/96		06/03/96	06/03/96	3	Ì	06/04/96	06/04/96	06/05/96			98/50/90	06/05/96	96/90/90	96/90/90	96/90/90			06/06/96	88	0/90	0/90			96,0	9 8	98	ğ		
70511			<u> </u>		П			_	1	T		•										ة ق											١	
> [7	<u>`</u>														<u>5</u>							mentat												50
•				Hon		Prep	ç	<u> </u>		A.		tion	_		monta		ation	uone				lon Fer	ģ	ation		0		change						ent/Jon
				Operation		Inoculum Prep	Set Up Prejnguhation	Incubation	Subtotal	Flask Growth	Set Up	Preincubation	Incubation Clean Up	Subtotal	Seed Fermentation	Set Up	Preincubation	rementation Harvest	CIP SIP	Clean Up	ubtota	Production Fermentation	Set Up	Fermentation	믕	SIP Clean Up	Subtotal	Heat Exchange	Set Up	Transfer	S S	Clean Up Subtotal	Š	Cont. Cent./Solids
						∢	S, G	ξĔi	3 8	2 A FI	ഗ്	ā.	<b>⊆</b> 0	ō	3 A S	Ø.	م ن	LX	OØ	. 0		4 A P	υ	. 11	J (	<i>,,</i> 0	"	6 A H	J, 1	\	. v,	Ĭ,		y ∀
		<u>_</u>			$oxed{oxed}$	1	<del></del>	- 60		1	<b>.</b> .	=	2 2	2 4	1	2 5	<b>₽</b> :	<u> </u>	2 23	ន	2 %	ł	3 23 23	3 8	<u>بر</u>	2 2	2 2		2 80	සු ද	₹ ₹	\$ \$		<del>&amp; &amp; t</del>
		1				-																												

FIG. 45A

															1					_	_	_	_									<b>-</b>					_	_	_	_		_	-	
				AA-1													ļ				_	_	$\perp$									$\perp$						1		_			_	
			Т	AI-2																											L							1					_	
			mmulogical		m																														_	າ 		1					_	
			╁	AB-7 /		_				1																														L			_	
			-	AB-6 A					T	1					1												-																_	
			t	AB-6	3				$\dagger$	1		_	_		T		T			_																								
0			-	AB4	$\vdash$		_	_	†	1					1		1					T																						
4506			ł	AB3	ļ~	_			$\dagger$	$\dashv$					$\dagger$		t	_	_			T	Ť												•	<u> </u>								
4)		.	-	AB-2 AE	╁		_		$\dagger$	十					†		t		_		_	$\dagger$	1								T									T				
1	. <u></u>		Blochemical		╁				$\dagger$	$\dashv$					+		t				_	$\dagger$	1								T												_	
į		-	쀠	-6 AB-1	╁				+	$\dashv$	_				$\dagger$		$\dagger$					$\dagger$	7						_		1	1								1				
ĺ			-	AC.8	+	_			+	+					$\dashv$		$\dagger$					$\dagger$	1	_							$\dagger$	1				_				†				
				AC-6	╀				+	$\dashv$					+		$\dagger$					+	$\dashv$								$\dagger$	$\dashv$				_	_			†				
alule				¥	╀				+	-		_	_		+		+					$\dagger$	$\dashv$	_		_	_		_		$\dagger$	1			_					†				
E Mo	anda in the contraction			AC-3	+	<u>. · ·</u>			$\dashv$		_	_			$\dashv$		+		_	_		+	$\dashv$	_	_			_			$\dagger$	1								†			_	
ble - F	Half Half		Chemical	AC-2	+				$\dashv$	$\dashv$							+			_		+		_							+									+				
QC Load Table - PE Module	Ō	sel d	ဦ		+				-								+					-		-	-		,	1			+	-				~			H	+				
ac r		OA/OC Samples	=	AV:2	$\perp$		_		-						$\dashv$		$\dashv$					$\dashv$		-			-				+	-								+			_	
		8	Visua	AV-1		> :	S 3	. Z	Σ			_	¥ 2	E 3	Σ.	-	$\dashv$		- ¥	<u> </u>	×	ξ		H		¥ ;	٤ ۽	¥ ¥	. ₹	₹	ձ			A	₹:	<del>-</del>	<b>\</b>	ξ <u>ξ</u>	-	+		¥:	₹ ¥	
. •				Time		10:00 AM	10:06 AM	11:21 AM	11:51 AN			90.00	02:30 PM	02:30	02:45 PM				01:30 PM	02:30 PM	01:30 PM	01:45 PM				12:30 PM	MT 05:10	10:30 AM	11:30 AM	12:30 PM	33						09:00 AM		L.		L		10:00 AM	
•			4					08/1/90					98/03/80			1		_	08/04/98	06/04/96	06/02/96	08/02/88				06/02/86	98/02/90	96/90/90	08/08/30	06/06/98	98/90/90			96/90/90	96/90/90	06/07/96	96/1/0/90	08/0//86				96/0/90	06/07/96	
			Finish		Ц						-					<u> </u>		_						H							L							09:00 AM	T				08:00 AM 08:00 AM	
		'		₽ E	08:00 AM	09:00 AM	10:00 AM	10:06 AM	11:21 AM				01:30 PM	05.30	03:30 FM 02:30 PM				MO oc.c.	01:30	02:30 PM	01:30 PM						01:30 PM			1								╄-					
			,		03/96	96/20/90	06/07/96	08/07/98	06/07/96				06/03/96	06/03/96	06/03/96				30,70,00	06/04/96	06/04/96	06/02/98				06/02/98	06/05/96	06/02/96	06/06/96	96/90/90	06/06/98			96/90/90	96/90/90	96/90/90	06/07/96	96/0/90				96/20/90	06/07/96	
		-	6	Date	F	Ě				_	+					$\dagger$	_	$\vdash$						t						_	7		5						T					
													•											1	<u></u>								Production Fermentation						1					
				Ē		tion					Prop	·		ation	c			owth		i,	anou e	E -			Seed Fermentation		ation	atlon			a		tion Fen		bation	tation			<u>-</u>	=	Heat Exchange			
				Operation	3	Centrifugation	Wash	<u>a</u> . 1	SiP	Sub Total	Inoculum Prep		Set Up	Preincubation	Incubation Clean Its	Subtotal		Flask Growth		Set Up	Preincubation	Clean Up	Subtotal		200d F6	Set Up	Preincubation	Fermentation	Harvest		Clean Up	Subtotal	Product	Set Up	Preincubation	Fermentation	음	SIP	Subtotal		Hoat E	Set Up	Transfer CIP	
						ő	₹	당	ທີ C	Š	8 =		တ	a.	= (		,	2 B F		J, (		`		- 1	 		-	-			-		4 8							•	6 B			
		-	_		+		69	<u>2</u>	2 G	3 3	L		25	89	62 63	3 8	3 2	ı.	ន	3 :	9 9	8 5	5 6 8	<u>ا</u> و و	<u>s</u> 2	<b>=</b>	22	2	7	9 %	3 8	20 00	: æ	£ 2	2	*	88	98	> 8	. 6	8 8	5 6	8 4	

FIG. 45B

QC Load Table - PE Module

:

				_	OA/UC Samples	Parding						L								_	•
						<u> </u>	Chamical	_				8	Blochemica						Immufogical	$\top$	الخ
	Start					1		[	100	AC-4 AC-6	-6 AC-6	8 AB-1	1 AB-2	2 AB-3	AB4	· AB-6	AB-6	AB-7	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Al-2	AA-1
Operation	Date		Date	Time	<u> </u>	AV-2	<u>د</u> د	-	$\overline{}$		17	П	1	H	$oxed{\parallel}$	$\prod$				$\dagger$	
	06/03/96	10:00 AM	08/07/98	11:00 AM				$\vdash$	-					_		_					
Sip Clean Up	06/07/96	11:00 AM		01:00 PM	1	$\dashv$	$\dashv$	$\dagger$	+	+	+	+	+	+	$\downarrow$	-					
Subtotal							1	_	$\dashv$	$\dashv$	$\dashv$	+	+	+	+					1	
6 B Cont Cent/Solids											_									_	
100	98/0/90	08:00 AM	96/20/90											_	£1				3		
Centritugation	96/20/90	09:00 AM		10:00 AM						_						<u> </u>					
Wash	96/20/90	10:00 AM	06/07/98											_	_					-	
GIP	06/07/96	10:05 AM							_								_				
Sir Clean Lo	06/07/96		_	- 1		+	1	†	+	+	+	+	+	+	+	-	L				
Sub Total							_		+	$\dashv$	+	$\dashv$	+	+	+	-	+	$\perp$			
1 C Inoculum Prep									_									· 			
Set lin	06/03/96	01:30 PM																			
Preficubation	96/03/96	02:30 PM									_		_		_						
Incubation	06/03/96	03:30 PM	06/04/96	02:30 PM 02:45 PM					_	$\dashv$	$\dashv$	$\dashv$	+	+	+	+	1	1			$\perp$
Subtotal			1-	<b>!</b> _										_							$\perp$
					$\perp$		T	T	1	$\dagger$	$\dagger$	+	$\vdash$	$\vdash$	$\vdash$	_	_				_
2 C Flask Growth												_		_							
Set Up	06/04/98	12:30 PM	06/04/96	01:30 PM																	
Preincubation	06/04/96																				
Clean Up	06/05/98	_		3 01:45 PM						+	$\dagger$	$\dagger$	$\dagger$	$\dagger$	+	$\vdash$	$\vdash$		_		
Subtotal					_					$\dashv$	$\dashv$	$\dashv$	$\dashv$	+	+	+	+	_	1		$\bot$
123 3 C Seed Formentation				_									_								
124 125 Set Up	08/02/98	11:30 AM	M 08/05/96																		
	08/02/88			_		•						٠٠		_		_			_		
	06/05/96			8 10:30 AM		7						<u> </u>									
	06/00/90	10:30 AM												_		_					
129 CIP 310 SIP	96/90/90				_																_
	06/00/36	3 12:30 PM	9/90/90	8 03:30 PM		$\downarrow$		$\downarrow$	$\int$	1	$\dagger$	1	T		-		-				
						_	_				+	十	1	+	+	+	+	+	$\downarrow$		╁
134 4 C Production Fermentation	_																				
136 136 Set Uo	96/90/90				=																
	06/08/98		M 06/06/96	11:00 AM	<del>-</del> -										47				<u>ო</u>		
	96/06/96	8 11:00 AM			<u> </u>	<b>'</b>															_
139 CF	06/10/90				-						,,										$\dashv$

FIC. 4SC

QC Load Table - PE Module

;<u>`</u>~

Subtotal  5 C Heat Exchange  Clean Up  Contringation  Sub Total  7 A Resolubilization  Coperation  Cop	in the contract of the contrac	11:00 AM 10:00 AM 10:00 AM 10:00 AM 10:00 AM 10:00 AM 10:00 AM 11:21 AM 11:51 AM 11:51 AM	AV-1 AV-2	AC-1 AC-2 A	AC:3	AC-6	AB-1 AB-2	AB-2 AB-3	33 AB4	AB.6 AB.6	AB.7	3 AI-1 AI-2	AAA-1
Subtotal  5 C Heat Exchange  5 C Heat Exchange  CIP  CIP  Subtotal  6 C Cont. Cent./Solids  CIP  CIP  Subtotal  6 C Cont. Cent./Solids  CIP  CIP  CIP  CONTY/96  CIP  CONTY/96  CIP  CONTY/96  CIP  CONTY/96  CIP  CONTY/96  CIP  CONTY/96  CIP  CONTY/96  CIP  CONTY/96  CIP  CONTY/96  CIP  CONTY/96  CIP  CONTY/96  CIP  CONTY/96  CIP  CONTY/96  CONTY		08:30 AM 09:00 AM 11:00 AM 11:00 AM 01:00 AM 10:00 AM 11:51 AM		AC.2	V V V V V V V V V V V V V V V V V V V				33 AB4		7-14 AB-7		AA-1
Subtotal  5 C Heat Exchange		08:30 AM 09:00 AM 11:00 AM 11:00 AM 01:00 AM 10:21 AM 11:51 AM				<del>1-1-1</del>			- A	п		m m	
Subtotal  Subtotal  Set Up  Call Transfer  Clean Up  Cont. Cent./Solids  Clean Up  Cle									- A	п		m m	
Subtotal  Subtotal  Set Up  Cip  Cip  Cip  Cip  Subtotal  Subtotal  Subtotal  Geory/96  Geory/96  Cip  Cont. Cent./Solids  Cip  Cip  Cip  Cip  Cip  Cip  Cip  Ci									9	п		m m	
6 C Heat Exchange  Set Up Clean Up Clea									6	п		m	
Set Up  Transfer CIP SIP Clean Up Cont. Cent./Solids Set Up Cont. Cent./Solids Cont. Cent./Solids Set Up Cont. Cent./Solids CIP Cont. Cent./Solids Cont. Cent./Solids Set Up CIP Cont. Cent./Solids Cont. Cent./Solids Set Up CIP Cont. Cent./Solids Cont. Cent./Sol										п		n	
Transfer 06/07/96 0 CIP SIP 06/07/96 0 CIP Clean Up 06/07/96 0 Set Up 06/07/96 06/07									6	п			
CIP   O6/07/96   O6/									6	М		n	
Sip 0607/86 1 Subtotal Subtotal Subtotal Subtotal Centriugation 06/07/96 06									0	п		n	
Subtotal  6 C Cont. Cent./Solids  Set Up Centritugation Centritugation Cip Cip Cip Cip Cip Cip Cip Cip Cip Cip		<u> </u>							n	п		m I	
6 C Cont. Cent./Solids  Set Up Centringation Wash CiP SIP Clean Up		ł							м	М		n	
Set Up Centringation Centringation O6/07/96 Wash CIP CIP CIP CIP CIP CIP CIP CIP CIP CIP							·		e .	Я		n	
Centringation 06/07/96 (Centringation 06/07/96 (CIP CIP 06/07/96 (CIP CIP O6/07/96 (CIP CIP CIP CIP O6/07/96 (CIP CIP CIP CIP CIP CIP CIP CIP CIP CIP													
Wash 06/07/96 CIP 06/07/96 SIP 06/07/96 Clean Up 06/07/96 Sub Total 7 A Resolubilization 06/07/96							:		_				
Sub Total  7. A Resolubilization Sat Up O6/07/96 O6/07/96 O6/07/96									+	1	+		<del></del>
7 A Resolubilization	1	i I									$\dashv$		
7 A Resolubilization Set Up O6/07/96			+			-		-	_		_		
Set Up 06/07/96				_					_				_
Set Up 08/07/96	_			_			_						
198/0/90	36 AM 06/07/96	6 10:06 AM	<u></u>			-		-					
06/07/96						<del>.</del>							
06/07/96							_						
SiP SiP SiP SiP SiP SiP SiP SiP SiP SiP	12:36 PM 06/07/96	6 01:36 PM 6 02:36 PM				-		+	+	+	+	1	+
	İ	Ц.	_										+
	-	1	+					-					
173 8 A Heat Exchange													
Set Up 06/07/96	11:06 AM 06/07/96	36 11:36 AM											
176 Transfer 06/07/96 11:34	11:36 AM 06/07/96												
96/20/90 dis		36 11:54 AM									1	1	+
179 Clean Up 06/07/96 11:5- 180 Subtotal	54 AM US/U/BD	4											$\dashv$
٥	-		-										
									-				
Set Up 06/07/98	11:39 AM 06/07/96												
Lysis Devo/786		96 12:34 PM											
						•							$\dashv$
Clean Up 06/07/98	12:34 PM 06/07/	98 12:34 PM											
189 Sub Total									-		-		$\frac{1}{2}$

12 45D

ż

QC Load Table - PE Module

,3.

				۲	מארכה ספוווחופי	-										İ				
	1000		Finish	>	Visual	ç	Chemical					Biochemica	ica las	ŀ	-	-	-	Ē	tmmulogical	텧
Onoration		- Lime		Time	_	AV-2 AC-1	.1 AC-2	2 AC-3	¥C.	AC-6	AC-6	AB-1	AB-2 A	AB-3	AB4	AB-6 AB-6	3-6 AB-7	1-7 Al-1	- Al-2	¥.
- Consider	96/20	08:00 AM	П	П	H		-	_	1				+	+	$\dagger$	+	╀	+	-	_
10 A Heat Exchange				_											_					
Set Up	96/0/90	12:04 PM	96/0/90	12:34 PM	_	_	ر سُر	<u></u>										_		_
Transfer	96/0/90			12:52 PM 12:52 PM	-															
a dis	96/20/90		08/07	12:52 PM		_									-				_	-
Clean Up	06/02/98	- 1	96/20/90	12:52 PM	$\dagger$	+	+	+	$\downarrow$			T	1	T	T	-	-	-	 	
Subtotal						-	_	_	$\downarrow$	$\perp$			1	†	$\dagger$	$\dagger$	+	$\dagger$	+	╀
8 B Heat Exchange																-			_	
1	06/02/96	12:52 PM	96/20/90	12:52 PM																_
Transfer	96/02/96			01:10 PM																
CIP	06/07/86			01:10 PM																
SIP of Lead D	96/0/90	01:10 PM	08/0//90	01:10 PM		-	$\dashv$	$\dashv$	$\perp$	_			1	†	$\dagger$	$\dagger$	$\dagger$	$\dagger$	+	+
Subtotal		·										•		1	$\dashv$	1	$\dashv$		+	+
9 B Hommogenization						-	-													
Sat Up	96/0/90	01:10 PM		01:10 PM							_						_			
Lysis	96/02/90		06/07/98	M4 15:10				_												
B	06/0/1/96			01:51 PM																
Clean Up	98/20/90	- 1	- 1	01:51 PM	†	+	+	+	+	$\downarrow$	$\downarrow$				T			$\vdash$	_	
Sub Total	<del></del>					-	-	-	_	_					1	1	1	$\dagger$	+	+
10 B Heat Exchange																				
Set Up	96/20/90																			
Transfer	96/02/96			02:09 PM				_										_		_
음 (	96/20/90											_			-					
SIP Clean Up	06/01/96	02:09 PM	06/07/98				$\dashv$	$\dashv$	$\dashv$	4	$\downarrow$				1	†	$\dagger$	$\dagger$	$\dagger$	+
Subtotal							-	$\dashv$	_	_	_						1	+	+	
8 C Heat Exchange																				
Set Up	96/20/90		96/20/90																	
Transfer	06/07/96	6 02:09 PM																		
g S	96/20/90			04:27		-			_										_	$\dashv$
Clean Up	16/20/90		A 06/07/96	05:27 PM		+	+	+	+	$\downarrow$	_	$\perp$								
Subtotal							-	-	-	$\dashv$	_	$\perp$				1	1	$\dagger$	+	╁
9 C Hommogenization																		-		
Set Up	96/20/96	6 02:27 PM	M 06/07/96	02:27 PM											_				—	—
Lysis	6110/00				_	-	-	-	-	•										

FIG. 45E

QC Load Table - PE Module

<u>'</u>~

					-	Mac	QA/QC Samples						-							L		_
		T cto		rejoin de la company		Visual		Chemical	_			1	å	Blochemical	-	-	$\mid$	-	-	Ē	1mmulogical	۲ کو
		orgu d	e E		e E		AV-2	AC-1	73	AC-3	AC-4 AC	AC-5 AC	AC-6 AB-1	1-1 AB-2	2 AB-3	3 AB4	4 AB 6	AB-6	AB-7	¥	¥ 5	₹
+	Operation	98/60	08:00 AM			П	$\mathbf{T}$	$\ $		H	H	+	+	+	+	+	+	+	1	$\downarrow$	_	
Ļ	CIP	96/20/90	03:07 PM		04:07 PM					-							_	_				
241	SIP	06/07/96	04:07 PM	06/07/96	05:07 PM 06:07 PM				_			$\dashv$	$\dashv$	$\dashv$	$\dashv$	+	+	+	+	$\downarrow$	1	1
  - 	Sub Total														$\dashv$	-	$\dashv$		_	$\dashv$	_	_
_1	1							T	T	T	-	H	$\vdash$									
246 1	10 C Meat Exchange												_									
247	Set Up	96/0/90	03:07 PM		03:07 PM														_			
248	Transfer	96/0/90	03:07 PM	06/0//96	04:25 PM										_							_
249	- S	98/20/90	04:25 PM		05:25 PM				_						_							_
261	Clean Up	96/20/90	05:25 PM		08:25 PM			$\dagger$	1	†	$\dagger$	$\dagger$	$\dagger$	+	+	-	$\vdash$	-	-	_	-	
262	Subtotal								1	1	1	1	$\dashv$	$\dashv$	+	+	+	+	+	+	+	+
_	11 A Resolubilization																					
256	Set Up	96/0/90	11:52 AM		12:52 PM									1								
257	Dilution	96/0/90	12:52 PM		01:22 PM									_				_				
92	Agitate	06/02/08	01:22 PM	08/07/98	01:52 PM						_	٠.										
269	- S	96/20/90	01:52 PM																			
2 =	Clean Up	96/20/90	01:52 PM	06/07/98	01:52 PM	ł		1	1	1	†	$\dagger$	+	$\dagger$	+	$\dagger$	╀	╀	╀	-	$\vdash$	┞
282	Subtotal :										1		1	$\dashv$	$\dashv$	+	+	+	+	+	+	+
1_	12 A Cont. Cent./Solids													_								
99		A8/10/20	12:52 PM		01:52 PM					•		•	-									
267	Set Up Centrifugation	06/10/90	01:52 PM	98/20/90																		
88	Wash	96/00/90	02:22 PM		02:28 PM													_				
269	CIP	06/07/96																				
270	Clean Up	06/07/90	02:28 PM								1	7	$\dagger$	$\dagger$	$\dagger$	$\dagger$	+	+	╁	+	╀	╀
12:	Sub Total		ı										$\dashv$	-	$\dashv$	_	$\dashv$	$\dashv$	-	$\dashv$	$\dashv$	+
1 _	11 B Resolubilization																					
276	Set Up	96/0/90	02:28 PM	96/20/90																		
1	Dilution	96/20/90	02:28 PM													_						_
78	Agitate	96/0/90		06/02/08	03:13 PM																	
6 3	GIP GIP	06/07/96	04:13 PM																		_	
281	Clean Up	06/07/96			_						T	1	$\dagger$	$\dagger$	+	+	$\dagger$	+	$\dagger$	+	+	╀
282	Subtotal													7	7	$\dashv$	1	$\dashv$	1	+	+	╫
	12 B Cont. Cent./Solids					_																
282	1000	06/07/96	02:13 PM		03:13 PM																	
287	Centrifugation	98/20/90												-	_			_				
888	Wash	96/0/90		96/20/90   1		_	_	_								_	-	-		•		

Fig. 45F

35

QC Load Table - PE Module

Start	00 AM	Date TIIIsh OG/07/96 CO6/07/96 CO6/07/96 CO6/07/96 CO6/07/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96 CO6/08/96		OA/QC Samples Visual AV-1 AV-2 A	themic	- 53	AC.3			Blochemica	mical		-			<del></del>	Immulogical	Act
Operation   Date   T	0 AM	78 88 898 898 898 898 898 898 898 898 89	4 PM 4 PM 4 PM 88 PM 88 PM 88 PM 88 PM		Chemic AC-1	_ 3			-	Bloche	nical	-	-		-	$\neg$	logical	Act
Operation   Date   T	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	798 898 998 1798 1798 1798 1798 1798 179	28 PM	$\overline{}$	AC-1	73			-			-	_	_	_		_	L
CIP 06/03/96 SIP 06/07/96 SIP 06/07/96 Sub Total 06/07/96 Set Up 06/07/96 Dilution 06/07/96 CIP 06/07/96 CIP 06/07/96 SiP 06/08/96 SiP 06/08/96 Subtotal	0 AM	27/96 27/96 27/96 07/96 08/96 08/96 08/96	# PM # PM # PW # PW # PW # PW # PW # PW			t	_		ACA	AB-1	AB-2 A	AB-3 A	AB-4 AB-6	S AB-6	-8 AB-7	- A-7	A -2	<u>₹</u>
CIP 06/07/96 SIP 06/07/96 Clean Up 06/07/96 13 A Resolubilization Set Up 06/07/96 Dilution 06/07/96 CIP 06/07/96 CIP 06/08/96 SiP 06/08/96 SiP 06/08/96 SiP 06/08/96 14 A Concentration		i i i	35:04 PM 35:04 PM 35:34 PM 02:28 PM 02:58 PM 08:58 AM					H			1	$\dagger$	+	+	+	$\frac{1}{1}$	-	$\perp$
SIP 06/07/96 Clean Up 06/07/96 Sub Total  13 A Resolubilization Set Up 06/07/96 Dilution 06/07/96 CIP 06/07/96 CIP 06/08/96 SIP 06/08/96 SIP 06/08/96 SIP 06/08/96 14 A Concentration		1 1	35:34 PM 35:34 PM 02:28 PM 02:58 PM 08:58 AM	_									_			<u>.</u>		
Clean Up 06/07/96  Sub Total  13 A Resolubilization  Set Up 06/07/96  Dilution 06/07/96  CiP 06/08/96  SiP 06/08/96  SiP 06/08/96  SiP 06/08/96  14 A Concentration		1	02:28 PM 02:58 PM 08:58 AM				:											
Sub Total  13. A. Resolubilization  Set Up Dilution O6/07/96 Agitate CIP CIP SIP O6/08/96 SIP O6/08/96 SIP Subtotal			02:28 PM 02:58 PM 08:58 AM 09:58 AM	+		1	+	+	+			-	-	┞	$\vdash$	-	-	L
13 A Resolublilization  Set Up  O6/07/96  Dilution  Agitate  CiP  CiP  CiP  CiP  Clean Up  O6/08/96  Subtotal	l		02:28 PM 02:58 PM 08:58 AM 09:58 AM						_			1	$\dashv$	$\dashv$	+	+	$\downarrow$	$\downarrow$
Set Up 06/07/96 Dilution 06/07/96 Agitate 06/07/96 CIP 06/08/96 SiP 06/08/96 Clean Up 06/08/96 Subtotal		I_	02:28 PM 02:58 PM 08:58 AM 09:58 AM	-			-	_						_		_		
Set Up 06/07/96 Dilution 06/07/96 Agitate 06/07/96 CIP 06/08/96 SiP 06/08/96 Clean Up 06/08/96 Subtotal		<u> </u>	02:28 PM 02:58 PM 08:58 AM 09:58 AM															
Objustion   O6/07/96			02:58 PM 08:58 AM 09:58 AM								_							
Agitate 06/07/96 CIP 06/08/96 SIP 06/08/96 Clean Up 06/08/96 Subtotal		I	08:58 AM 09:58 AM									_			_			
CIP 06/08/96 SIP 06/08/96 Clean Up 06/08/96 Subtotal 14 A Concentration			09:58 AM					_				_			_			
SiP 06/08/96 Clean Up 06/08/96 Subtotal 14 A Concentration		- 1	10.60 6111										_				_	
Subtotal Subtotal 14 A Concentration	- t		10:56 AM				_					1	+	$\dashv$	+	+	4	$\downarrow$
Sucrotal  14 A Concentration		_		-					L	_				_				
14 A Concentration				-	_		$\dashv$	$\frac{1}{2}$	4	$\perp$		1	+	$\dagger$	+	+	$\downarrow$	1
			· <u>·</u>															
_		96/80/90	07:38 AM															
Flush 6/08/96			08:18 AM						_						_			
Prime 06/08/96	_		08:58 AM											-				
Concentration 06/08/96	_	06/08/96	09:58 AM													_	_	_
Dilution 06/08/96		06/08/96	10:25 AM	_			_	_	_			-					_	
Wash 06/08/96		98/98/98	11:19 AM															
Flush 06/08/98	11:19 AM	98/90/90	MY 85:11	_				_	—									_
Store OG/08/86	MA 85.11	06/06/00	MG 04:40															
96/80/90   GID	01-19 PM	06/08/90	02:19 P.M				<u>.                                      </u>					_				-		
	02:19 PM	06/08/96	03:19 PM					-	$\downarrow$	_			+	+	$\dagger$	$\frac{1}{1}$	+	$\downarrow$
Sub Total													-		$\dashv$	-	-	_
	†			+	-		$\mid$	$\vdash$	L	L			_					_
319 16 A Microfiltration														-				
Set Up 06/08/96	10:03 AM	96/00/90	11:03 AM														_	
Flush 06/08/96	11:03 AM	96/09/90	MA LLIT					_	_									
Prime 06/08/98	MA TUILL	98/90/90	11.19 AM					_								_		
Filtration	11.18 AM	08/00/00	11.49 AM															
Wash 06/00/04/06	11.49 AM	08/08/96	11:51 AM							_								
	11:51 AM	96/09/90	11:55 AM						_	_								
96/80/90	11:55 AM	96/00/90	12:55 PM															
96/80/90 dlS	12:55 PM	96/90/90	01:55 PM															
Clean Up 06/08/96	01:55 PM	96/08/90	02:55 PM	+			+	+	+	-	$\int$		$\dagger$	$\dagger$	$\dagger$	+	-	┡
													1	_	1	$\dashv$	-	$\dashv$
		T		$\parallel$				-	-									
333 16 A P/AMPLC																		
Foullibration 06/08/96	10:17 AM	96/90/90	11:24 AM															
1 0ad	11:49 AM		12:31 PM														_	
Wash	12:31 PM		01:52 PM		_	_	_	_	_	_	_	_	-	_	-	-	_	_

FIG. 456

QC Load Table - PE Module

100

יינים ביינים היינים היינים היינים היינים היינים היינים היינים היינים היינים היינים היינים היינים היינים היינים ביינום ביינים היינים היינים היינים היינים היינים היינים היינים היינים היינים היינים היינים היינים היינים היינים

_						90011	actor											-		}		
_						QAQC Samples	altibies						-							_		_
		treto		Fluish		Visual	ರ	Chemical					Bloc	Blochemical	<u> </u>		-	ļ	-	Ē	Immulogical	됩
			Time		ПД	$\overline{}$	AV-2 A	AC-1	AC-2 AC	AC-3 AC-4	4 AC-6	6 AC-8	AB-1	1 AB-2	Z AB-3	AB4	AB-6	AB-6	AB-7	¥	A -2	AA-1
$\downarrow$	Operation	06/03/96	08:00 AM		Γ		1	П	П	П	П	$\ $	H	+	+	+	+	1	+	$\downarrow$	1	$\downarrow$
	Clube A	08/08/98	01:52 PM	96/96/96				_					_					_		_		_
339	Elute 8	96/08/90	03:12 PM																			_
340	Regenerate	96/80/90	03:12 PM		_									_								
341	Store	96/08/90	03:25 PM	06/08/96	03:52 PM	_							_					_				
342	CIP	96/08/06	03:52 PM																			
<del>2</del> 3	SIP	96/90/90	05:52 PM				_		$\dashv$	-	$\dashv$	-	-	-	$\dashv$	4	4	1	4	$\downarrow$	+	1
1 ×	Sub Total			┺	↓_															_		
346									_								_	$\dashv$	$\dashv$	$\dashv$	4	-
ᆚ	O 1014 4101 V							H	-	-	-	-						_				
	17 A FIAMPLC									_								_				
243	oojjesejili ee n	96/80/90	02:59 PM	96/90/90	03:38 PM						_						_					_
200	בלפיים ביים	06/08/96	03:12 PM								_					-				_		
163	Wesh	96/08/90	04:17 PM														_	_			_	
1 1	A etila	96/08/90		96/80/90		_		_					_			_						
3 2		06/08/96		96/08/90							_			-				_			_	
386	Receptate	06/08/98	05:49 PM	98/08/96			_	_				_	-							_		
> 9	Store	96/00/90	05:57 PM										_					_		-		
367	S S S	08/08/96	06:13 PM							-	_											
358	SIP	96/80/90						_				_										-
	Clean Up	06/08/36	08:13 PM	06/08/96	M4 51:80	1	1	$\dagger$	$\dagger$	+	+	1	-	+	H	$\vdash$	_	H	-		_	
360	Sub Total								7	$\dashv$	$\dashv$	$\dashv$	$\dashv$	$\dashv$	$\dashv$	+	+	+	+	+	+	-}-
<u> </u>	18 A Flow Dialysis														-	_						
363	1110	06/08/98	03:29 PM	06/08/98	04:29 PM																	
, 20 A	do les	96/80/90																				
366	Prime	96/80/90	05:09 PM									-	_	<u> </u>								
29	Dialysis	06/08/36	05:49 PM		3 06:49 PM		•	_														
368	Wash	06/08/86	06:49 PM								_											_
69	Flush	06/08/98	06:49 PM	98/90/90	07:08 PM								_	_						_		
370	Store	96/90/90	MT 80:70		08:49																	
371	<u>.</u>	06/00/90						_		_	<del></del>	_	-				_		_			
7 1	Clean Up .	96/80/90			10:49			1	1	1	+	-	+	+	+	+	+	+	+	+	╀	+
37.	Sub Total																	-	-		-	$\dashv$
L_	19 A P/A MPLC			-							-	-	$\vdash$	$\vdash$							-	
377	: :	90,00	08.90		A 14.31 DM	_																
378	Equilibration	06/00/90		06/08/96				_					_								_	
2 6	DROJ DROJ	96/80/90											_		_	_						
384	Flute A	96/08/96				_												_				
382	Elute B	96/90/90																_				
383	Regenerate	96/80/90				_																
384	Store	96/80/90		M 06/08/98		_																
385	CIP	96/08/96		_	_	_										_	_	_		_		
														-		-	-			_		

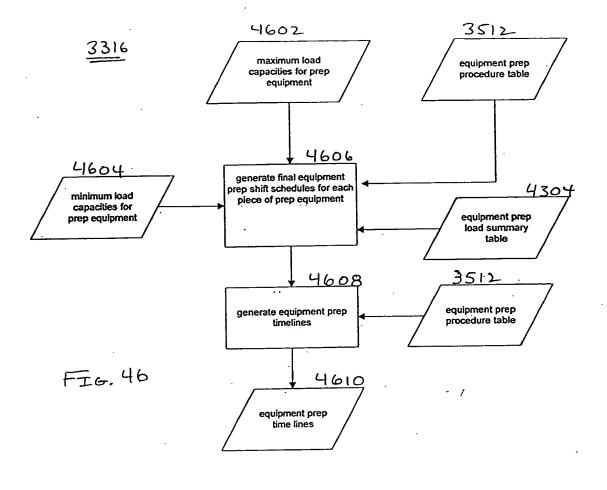
FIG. 4SH

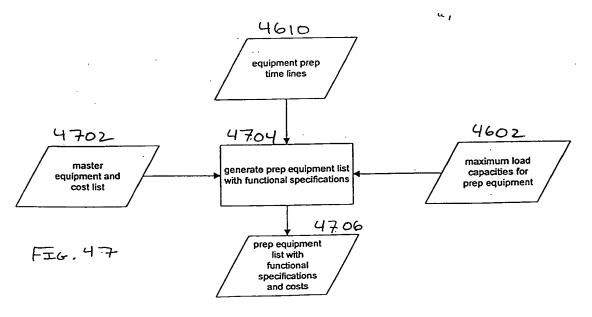
QC Load Table - PE Module

ı
- 1
(3
] =
::±
ļ. ±
()
-
1: ±
1.1
1 GO 144 144 148
Ü
Eï
[]
(A
£
<u>.</u> =
1,3
٠.3
: <u>-</u>
1.4

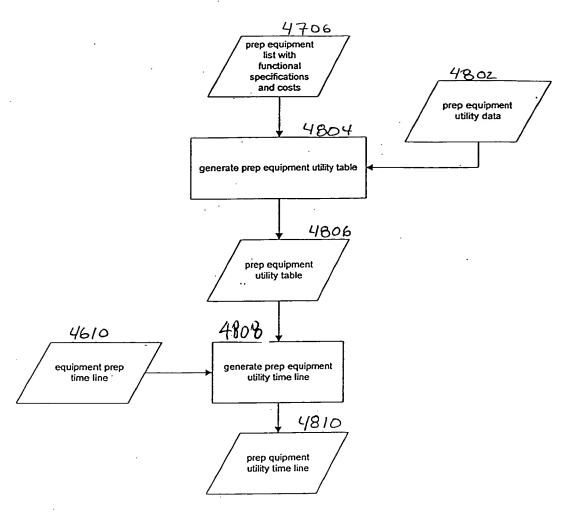
Chem. Up	AV.2 AC.1 AC.2
Clear Up	AV.2 AC.1 AC.2 AC.4 AC.5 AC.4 AB.7 AB.2 AB.3 AB.4 AB.5 AB.7 AI.1 AI.2 AB.7 AC.1 AC.2 AC.1 AC.5 AC.4 AC.4 AC.5 AC.4 AC.5 AC.4 AC.5 AC.4 AC.5 AC.4 AC.5 AC.4 AC.5 AC.4 AC.4 AC.5 AC.4 AC.4 AC.4 AC.4 AC.4 AC.4 AC.4 AC.4
Operation         Date         Time         Date         Time         AV-1 AV-2 AC-3 AC-3 AC-3 AC-3 AC-3 AC-3 AC-3 AC-3	AV.2 AC.1 AC.2 AC.4 AC.6 AB-1 AB-2 AB-3 AB-3 AC.4 AC.5 AC.4 AC.6 AB-1 AB-2 AB-3 AB-3 AC.4 AC.5 AC.4 AC.6 AB-1 AB-2 AB-3 AC.4 AC.5 AC.4 AC.6 AC.6 AB-1 AB-2 AC.5 AC.4 AC.6 AC.6 AB-1 AB-2 AC.5 AC.5 AC.5 AC.5 AC.5 AC.5 AC.5 AC.5
Clean Up	
20 A Flow Dialysis         06/08/96         10:39 PM         06/08/96         11:39 PM           20 A Flow Dialysis         06/08/96         07:00 PM         06/08/96         07:00 PM         06/08/96         07:00 PM           Set Up Flush Prime         06/08/96         07:00 PM         06/08/96         07:00 PM         06/08/96         07:00 PM           Flush Prime         06/08/96         07:00 PM         06/08/96         07:00 PM         06/08/96         07:00 PM           Clash Prime         06/08/96         07:00 PM         06/08/96         07:00 PM         06/08/96         07:00 PM           Clash Prime         06/08/96         07:00 PM         06/08/96         07:00 PM         06/08/96         10:20 PM           Clash Up         06/08/96         07:00 PM         06/08/96         10:20 PM         06/08/96         10:20 PM           Sip         06/08/96         07:00 PM         06/08/96         11:20 PM         06/08/96         11:20 PM           Sub Total         06/08/96         11:20 PM         06/08/96         11:20 PM         06/08/96         11:30 PM           Store         06/08/96         11:20 PM         06/08/96         11:20 PM         06/08/96         11:34 PM           Store         06/08/96 </th <th></th>	
20 A Flow Dialysis         O6/08/96         07:00 PM         O6/08/96         07:00 PM           Set Up Flush         O6/08/96         07:00 PM         O6/08/96         07:00 PM           Flush Prime         O6/08/96         07:00 PM         O6/08/96         07:00 PM           Glalysis         O6/08/96         07:00 PM         O6/08/96         07:00 PM           Store         O6/08/96         10:20 PM         O6/08/96         11:20 PM           O6/08/96         11:20 PM         O6/08/96         11:20 PM         O6/08/96         11:20 PM           Sub Total         O6/08/96         11:20 PM         O6/08/96         11:20 PM         O6/08/96         11:30 PM           Store         O6/08/96         11:20 PM         O6/08/96         11:30 PM         O6/08/96         11:34 PM           Store         O6/08/96         11:34 PM <td< th=""><th></th></td<>	
20 A Flow Dialysis  Set Up  Set Up  Co6/08/96  Flush  Co6/08/96  Co6/08/96  Cof/08/96  Coff Coff Coff Coff Coff Coff Coff Cof	
Set Up	
Set Up 06/08/96 07:00 PM 06/08/96 07:00 PM 06/08/96 07:00 PM 06/08/96 07:00 PM 06/08/96 07:00 PM 06/08/96 07:00 PM 06/08/96 07:00 PM 06/08/96 07:00 PM 06/08/96 07:00 PM 06/08/96 10:20 PM 06/08/96 10:20 PM 06/08/96 10:20 PM 06/08/96 10:20 PM 06/08/96 10:20 PM 06/08/96 10:20 PM 06/08/96 10:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:30 PM 06/08/96 11:30 PM 06/08/96 11:30 PM 06/08/96 11:36 PM 06/08/96 11:36 PM 06/08/96 11:36 PM 06/08/96 11:36 PM 06/08/96 11:36 PM 06/08/96 11:36 PM 06/08/96 11:34 PM 06/08	
Flush O6/08/96 07:00 PM 06/08/96 07:00 PM O6/08/96 08:20 PM O6/08/96 08:20 PM O6/08/96 10:20 PM O6/08/96 10:20 PM O6/08/96 10:20 PM O6/08/96 10:20 PM O6/08/96 10:20 PM O6/08/96 10:20 PM O6/08/96 10:20 PM O6/08/96 10:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:20 PM O6/08/96 11:30 PM O6/08/96 11:30 PM O6/08/96 11:30 PM O6/08/96 11:30 PM O6/08/96 11:30 PM O6/08/96 11:30 PM O6/08/96 11:30 PM O6/08/96 11:30 PM O6/08/96 11:30 PM O6/08/96 11:34 PM O6/08/	
Dialysis	
Colony   C	
Flush	
Store 06/08/96 10:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 11:20 PM 06/08/96 12:20 AM 06/08/96 12:20 AM 06/08/96 12:20 AM 06/08/96 12:20 AM 06/08/96 12:20 AM 06/08/96 12:20 PM 06/08/96 11:30 PM 06/08/	
Store Cup Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:20 PM Cologyed 11:30 PM Co	
Sub Total   C6/08/96   11:20 PM   C6/08/96   11:20 PM   C6/08/96   11:20 PM   C6/08/96   11:20 PM   C6/08/96   11:20 PM   C6/08/96   11:20 PM   C6/08/96   11:20 PM   C6/08/96   11:20 PM   C6/08/96	
Sip	
Sub Total   Cologida	
21 A PIA MPLC  Equilibration  Cof/08/96  Coad  Vesh  Coad  Cos/08/96  Cos/08/	
21 A PIAMPLC  Equilibration  06/08/96  Cod  Vash  Elute A  06/08/96  Elute B  Regenerate  06/08/96  10.20 PM  06/08/96  10.20 PM  06/08/96  10.20 PM  06/08/96  10.20 PM  06/08/96  10.20 PM  06/08/96  11.30 PM  06/08/96  Store  Cip  Cip  Cip  Cip  Cip  Cip  Cip  Ci	
Equilibration 06/08/96 09:28 PM 06/08/96 Load 06/08/96 10:20 PM 06/08/96 Nash 06/08/96 10:20 PM 06/08/96 Elute A Elute B 06/08/96 11:35 PM 06/08/96 Store 06/08/96 11:35 PM 06/08/96 ClP 06/08/96 11:34 PM 06/08/96 SiP 06/08/96 11:34 PM 06/08/96 SiP 06/08/96 11:34 PM 06/08/96 SiP 06/08/96 11:34 PM 06/08/96 SiP 06/08/96 11:34 PM 06/08/96 O6/08/96 SiP 06/08/96 11:34 PM 06/08/96 O6/08/96 SiP 06/08/96 D6/08/96 D	
Equilibration 06/08/96 U.S.C PM 06/08/96 Vassh 06/08/96 U.S.C PM 0	
Vash Vash Elute A  Elute B  Elute B  Eggenerate Store  CiP  CiP  Cip  Cip  Cip  Cip  Cip  Cip	
Elute A 06/08/36 11:35 PM 06/08/36 Elute B 06/08/36 11:36 PM 06/08/36 Store CIP 06/08/36 11:34 PM 06/08/36 CIP 06/08/36 11:34 PM 06/08/36 CIP 06/08/36 11:34 PM 06/08/36 CIP 06/08/36 11:34 PM 06/08/36 CIP 06/08/36 11:34 PM 06/08/36 CIP 06/08/36 11:34 PM 06/08/36 CIP DE	
Elute S  Elute S  Regenerate 06/08/96 11:36 PM 06/08/96  Store 06/08/96 11:34 PM 06/08/96  CIP 06/08/96 11:34 PM 06/08/96  Sip 06/08/96 11:34 PM 06/08/96  Clean Up 06/08/96 11:34 PM 06/08/96  Sub Total 06/08/96 11:34 PM 06/09/96	
Regenerate   O6/08/96   11:36 PM   O6/08/96   Store   O6/08/96   11:42 PM   O6/08/96	
Store 06/08/96 11:42 PM 06/08/96 CIP 06/08/96 11:54 PM 06/08/96 SIP 06/08/96 11:54 PM 06/08/96 SIP 06/08/96 11:54 PM 06/08/96 Sub Total 06/08/96 11:54 PM 06/09/96 22 A Sterile Filtration	
CIP 06/08/96 11:54 PM 06/08/96 SIP Clean Up 06/08/96 11:54 PM 11:54 PM 06/08/96 Clean Up 06/08/96 11:54 PM 06/09/96 Sub Total Sub Total 22 A Sterile Filtration	
Sip 06/08/96 11:54 PM 08/08/96 Clean Up 06/08/96 11:54 PM 06/09/96 Sub Total 22 A Sterile Filtration	
Sub Total  22 A Sterile Filtration	
22 A	
22 A	
Set Up Set Up 06/09/96 08:06 AM 06/09/96	
Filtration 06/08/96 11:36 PM 08/09/96	
Storage 06/09/96 12:06 AM 06/09/96	
CIP 06/09/96 12:36 AM 06/09/96	
SIP 06/09/96 12:36 AM 06/09/96	
426 Clean Up 06/09/96 12:36 AM 06/09/96 01:38 AM	
426 Sub Total	

ISh LT



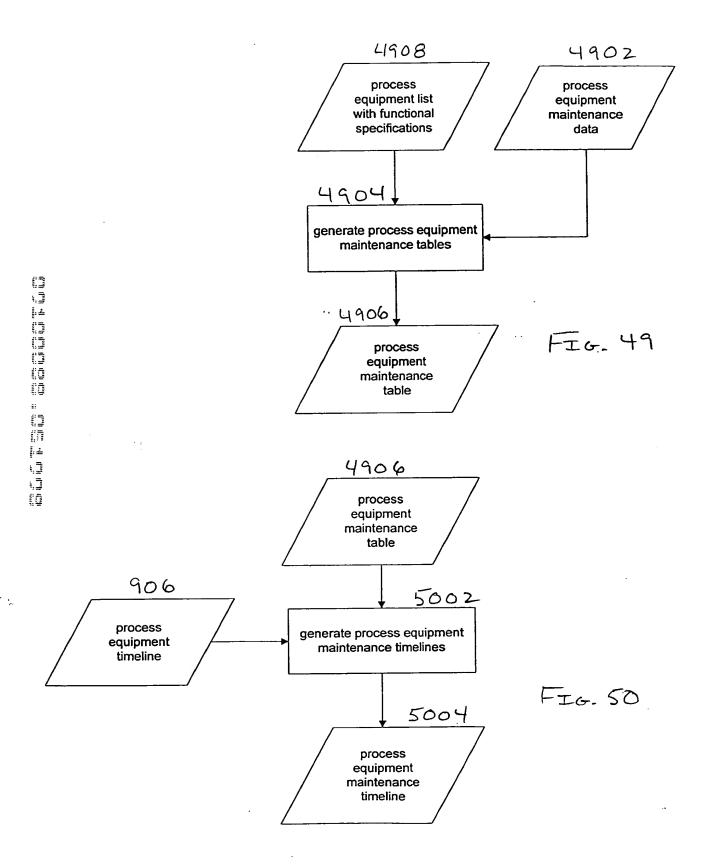


anang,



Short.

Ftg. 48

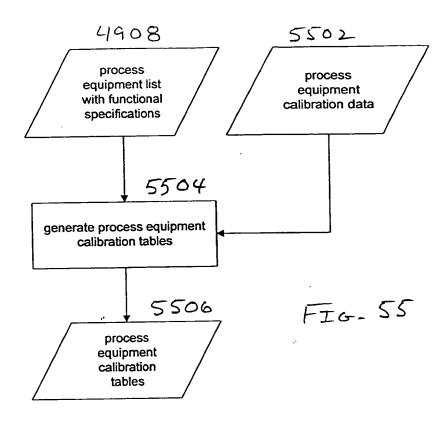


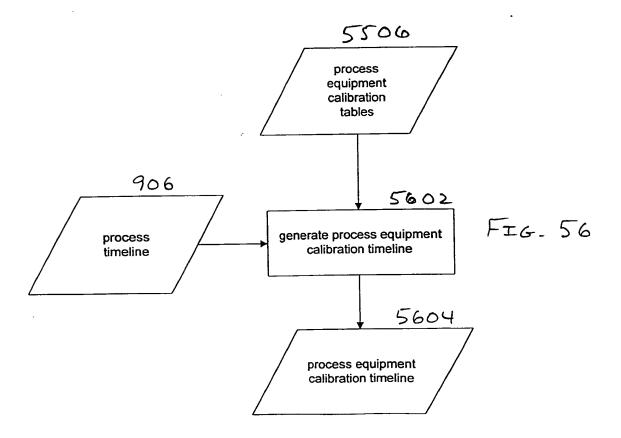
5102

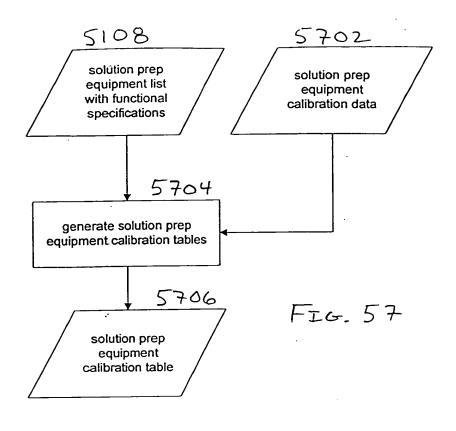
والتجاليا

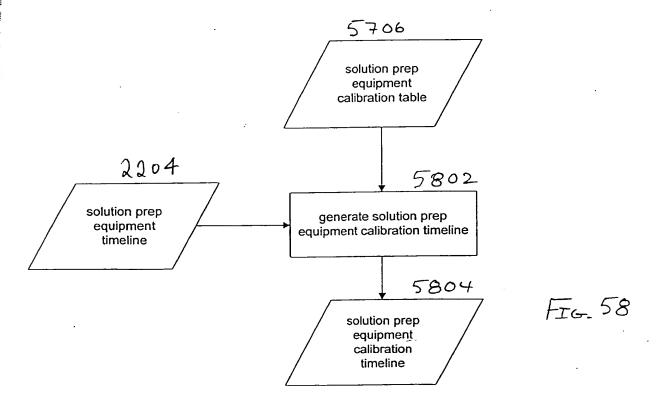
ಇಕ್ಷಣ್ಣ...

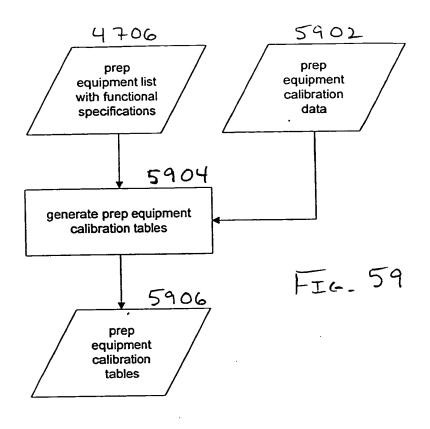
5302



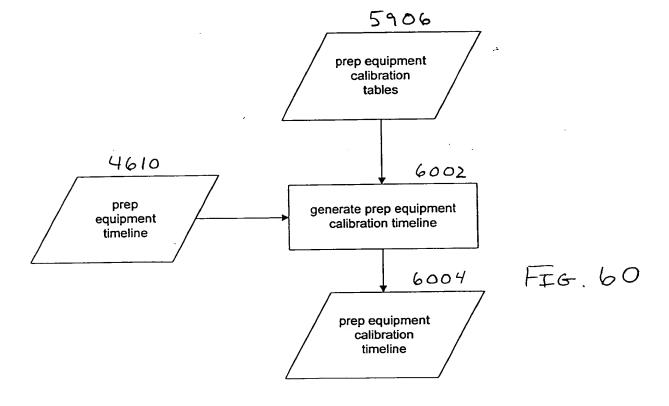


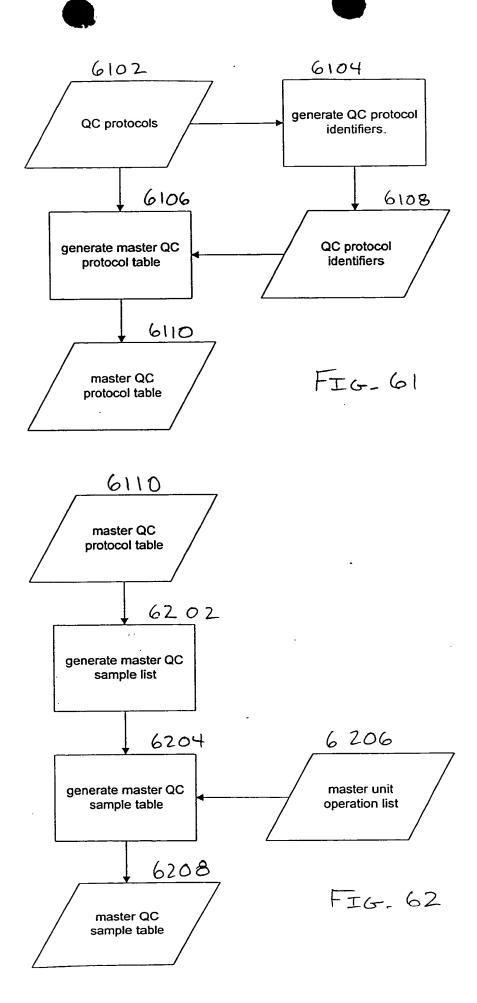






injuje:





9049	Bearings	Materials	Item No.			THE CONTROL OF THE PROPERTY OF		COLUMN CONTROL		MANAGEMENT STREET, STATE STREET, STREE	10	IND REGINETICS STATE				Districted District Industrial States of the States of S	HAND THE PROPERTY OF PARTY.								· ·	-			_
		_	s \$/Cycle	A CONTRACTOR OF THE PERSON OF	_	DESCRIPTION OF THE PROPERTY OF				3043048	550.	CHARACTER BATTER CONTINUE	.05			PERSONAL PROPERTY	description of the second												
		Labor	\$/Cycle Hours	HUNGER ENDER				WATER BEAUTY		THE PERSON NAMED IN	_		1 6242.		_	CHESTAGE   CHESTAGE	THE CHINASON						<del> </del>						
90 69	/		Unit Cost \$/C								55	HERENCE COSTS				CHECK CHARLES	HOLDEN WAY	•						. <u> </u>			_		
nentation		-	Cycle Life U	# CANADA SA				A LONG TO SERVICE OF			<b>5</b> <sub>6</sub> O		350			The state of the s	CHARLES OF PARTY LANGE												
al Fem			ρίζ					2			_	SECTION 1					2												
Microbi	Gaskets	Materials	Item No.			TO SECURITY OF		THE STREET, STREET,			मेम्ब्रिम		b8529			The second secon	STATE OF THE PERSON					. •							
Equipment Maintenage liable - Microbial Fermentation 6구0년			\$/Cycle			64888888888888888888888888888888888888		400-3000000			2580.	\$17.750 PASS					W.C.K.C.K.C.K.C.K.												
Aeinten		Labor	Hours							ESTATE OF THE PARTY OF THE PART	'n	O. STATE OF THE PARTY OF THE PA						<u> </u>					- <del></del>						
TOT9			\$/Cycle	THE STREET						ALC: NO SECTION	55'	SPEEDERS SEE																	
	_		Unit Cost	SECUL METEROLOGICAL		BELEVIS ASSESSED.		The state of the s		ANGEL SALES ALEXAND		AND LANDSHIPS OF HEADS OF MANAGES AND SANDERS OF SANDER																-	
			Cycle Life	200202020						DESCRIPTION OF THE PROPERTY OF	091	SECTION STATES																	
			ģ						·		_	Name and	·				2000							_				<u>.                                    </u>	
7049	Filters	Materials	Item No.	SECURE METAGENCUSA		STATEMENT STATEMENT STATEMENT	_	SECURIOR DESCRIPTION OF THE PROPERTY.		PERSONAL PROPERTY IN CONTRACTOR OF THE PERSON OF THE PERSO		No. of Control of Street					SOMETHING SOME												
h)	/		Equipment Items	Mannaculumi Preparakanana	-80 C Stock Freezer Shaking Water Bath	SZARI SKISTOWING STREET	Microscope	#32Seedjeementationsamment	Seed Bioreactor	santenmentation markage name	Production Bloreactor	What was the second second	Harvest Heat Exchanger	Harvest Vessel	A 1 - 1 - 1 - 4	Agitator	※6点Cell(Concentration、製作機能は	Pump	Filter Holder	Manifolding	Instrumentation	MF Flush Vessel	MF Prime Vessel	ME Eilirata Vassal		Agitator	MF Wash Vessel	MF Regeneration Vessel	MF Storage Vessel

FIG. 64A

;;**`**~

2149		ſ	à	21,42,8		25.00			diensis	5			-	S CANADA		_								
9	Belts	Materials	Item No.	D DOWN CONTROL		THAT SERVICE IN	ANTERNASIA I		85258	TANK SALTE				CENTRAL CONTROL			-					_		
	_B	2	\$/Cycle It	TATE PLANTERS		SERVICE SACRE	A SERVICE	40.	3 Salataskidas	S SECURITION OF				C CHICAGO CONTRACTOR OF CONTRA								<del></del>		
		Labor	Hours	S CANADA S		TO CHEST OF THE CH	STERNAL		N. C. C. C. C. C. C. C. C. C. C. C. C. C.					thundaken.								_		
0149		_	\$/Cycle	i obsessors		UNESSTEEN WHEEL	AND SAME	.048 .035	PAR CENTRAL PROPERTY OF THE PAR	Special grantification (separation) (separation)													8 6 6	
	,		Unit Cost	ACCUMPANCE OF		STATE STATE		12 18.9	AST TRAVAL	SATURATE SATURATION OF THE PARTY OF THE PART				A THURSDAY OF THE									_	
கு கூடி இரும்பாக்கள் இரு நிருந்தின் இருந்தின் இருந்தின் இரு நிருந்தின் இருந்தின் இருந்தின் இருந்தின் இருந்தின் இது நிருந்தின் இருந்தின் இருந்தின் இருந்தின் இருந்தின் இருந்தின் இருந்தின் இருந்தின் இருந்தின் இருந்தின் இருந்			Cycle Life	SUSSESSE CONTRACT TO THE SUSSESSE SUSSESSES SU	No.		S STATE OF S	250 250	eproperorate between the property of the contract of the contr	Management Recognition				ANNO DATAM SERVINE BUTTONIO SERVINE DESCRIPTO DE SOCIETA DE SOCIET				_					14 14	
Microbi			aty Cy					7 1						99 ENGEN						<u> </u>		<u> </u>		
a Table	Seals	Materials					S ASSOCIATION S	5698 h	- The state of the	STATE STATE OF THE					•				·					
Adintenac	8	_ <	\$/Cycle			Confession of the Confession o			and the same of th	Sept. Resident		<del></del>		***************************************								_		
		Labor				N. S. S. S. S. S. S. S. S. S. S. S. S. S.	2			HERMINE														
			\$/Cycle				to a service of the s			CONTRACTOR BETWEEN CONTRACTOR OF THE CONTRACTOR				Na Property land										
i.			Unit Cost						MINISTER ENVELOR	DENCE STREET, SEE				Brate and a second										
,			Cycle Life						enisaning					NAME OF THE PERSON NAMED IN										
		ì	o ₽							227/2004				<b>EX.10</b>										
			Equipment Items			Shaking Water Bain Mark Covidher Space Covid British Covid British Covid	Microscope	Seed Bioreactor	নিক্রন্থিত তারে বিশ্বনার বিশ্	MSWWholetGelli Barvestermeave		Harvest Vessel	Agitator	REECOINGONCONTATION TO PROPERTY	Filter Holder	Manifolding	MF Flush Vessel	MF Prime Vessel	MF Filtrate Vessel	Agitator MF Wash Vessel	MF Regeneration Vessel	MF Storage Vessel		
			Equip		m(kiluocululu)	Shakii M246[ask(Gro	Micros		#4#Fermenta	esewWholesse	Harve	Harve	Agitat	REBCOLICONO Pumo	Filter	Manif	MFFI	MF P	MF	Agitat MF W	MFR	MFS		

:<u>`</u>

	÷		19	E E E	oment Ma	aintenace	Table	Equipment Maintenace Table - Microbial Fermentation	Fermenta	ition 6416 /	•	,		. &	8179
			<b> </b>			Shafts				\			Lubricant	-	
				Labor		Materials			•		Labor		Materials		
Equipment Items	Cycle Life	Unit Cost	\$/Cycle	T.,	\$/Cycle	Item No.	ĝ	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	ģ	Cycle Life
		Management Conference (1979)	AND COMPANY OF THE PARKS	Ham Brothess	Section of the sectio	NICOSON (CAMPA	34,000,000	ENCATOREM NOTE OF THE PROPERTY	STATE OF THE STATE	SECURISION		TAX MARKET	ATTENDED TO	03/402	ELIZA DE CARACIE
Strain Country Style Sty			O-CONTRACT OF THE O												
R2BELERIGIOWITHMENTS REPORTED TO THE PROPERTY OF THE PROPERTY	A SANCHARAN SANCES	CERTIFICATION CONTRACTOR	A CANADA	30000								HARMARK	11 PER PER PER PER PER PER PER PER PER PER	an Nasasan	N. C. C. C. C. C. C. C. C. C. C. C. C. C.
展3次Seedle6mentation來班班路等的		MAN STREET STREET			ENTERED BESTERN							HANNER BANKASAN	2. P298F	i N	
RANGETUGINATION SERVENSING PRODUCTION Bioreactor	200	F0240876080	20°		.035	110000111111111111111111111111111111111						ROSTRACION	रमस्यक्ष्म् यभागन्त्रसम्बद्धाः	ALEGE TO THE PARTY OF THE PARTY	BESTERANS
#59XVDO(e)Geoligences harastuma sanatumaen mensakanan Harvest Heat Exchanger			STATE OF THE PERSON NAMED IN	and the second	Symphotocox openings and the street of the	Name of the last o		ACCUPATION REPORTS PROCESSES	pisassien/stik	Seate Seate Seate Seate Seate Seate Seate Seate Seate Seate Seate Seate Seate Seate Seate Seate Seate Seate Sea	Westerna	NAMES AND ADDRESS OF THE PARTY	HAMMAN	SE SENTINGE	ANTERIOR WITH THE CONTROL OF THE CON
Harvest Vessel															
ones/menes		Mark Compagnetical		***************************************		WEEK TO THE THE THE THE THE THE THE THE THE THE		ESSIVE SAFETA			**************************************		श्चामसम्बद्धाः	- In the second	
Filter Holder Manifolding Instrumentation									<u> </u>	-					
MF Flush Vessel MF Prime Vessel					-		·	•							
MF Filtrate Vessel															
Agitator MF Wash Vessel		· · · · · · · · · · · · · · · · · · ·					-						<u></u>		
MF Regeneration Vessel MF Storage Vessel	·														<del></del>

) +9 . JI

				, <b>1</b>			thing the table of the count and the great great and the count of the		1 Formon	totion	
			9	8179 8179	uipment	Mamte		6420 (420		ומוסוו	
			+		Thermal Media	edia		,			
			Labor		Materials					Labor	
Equipment Items	Unit Cost	\$/Cycle		\$/Cycle	Item No.	Qty	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle
				A POST OFFICE AND A POST OF THE POST OF TH	academical solutions			ACCOUNTS TO STATE			安建 500
estigliocalium Bropanisarioneris desagnation desagnation destructor desagnation desagnation in the contract of	がはないのではない		100 H		NAME OF THE OWNER, OWNER, OWNE		was in the second				
									0	(Acceptance)	A STATE OF THE PARTY OF THE PAR
W2MElaskaGrowthmamagaments	的形式形式,是自己的影响,是一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个	No. of the last of	TIME CHILL	SALES COMPANY		E CONTRACTOR DE LA CONT		STATES AND AND AND AND AND AND AND AND AND AND		March Company	Way Personal Control
Microscope											
ri3 r Seedifermentation program	NI STANDARDEN	THE STATE OF	20 Sept 20 Sep		THE REAL PROPERTY.	The state of	Proposition (property by Person (property) (property) (property)	THE PROPERTY OF THE PROPERTY O		SECTION OF SECTION OF	
Seed Bioreactor			·.	341,							
	AND REPRESENTATION OF THE	PETER CONTRACTOR	EZECKE STATE		BERNATURA SA		4	WESTERNAMENTON	月曜		A STATE OF THE PARTY.
gericelleuchenenenenenenenenenenenenenenenenenenen						5		. 85	425	-	<del>ر</del> ک
なる。WholeicelliHarvest歌語	m propagately approached propagate propagate propagate propagate			<b>TOTAL PARTIES</b>	A CHARGO CONTRACTOR	<b>E</b>	菱	ANGELE SESTIMATION OF THE PROPERTY SESTIMATION OF THE PROPERTY			
Harvest Heat Exchanger	<b>L</b>										
Harvest Vessel	· T										
Agitator	<del></del>										
<b>素8度Cell(Concentrations</b> 対 <b>的条件</b>	oncal mente jonalements sectionally and principal	NAME OF TAXABLE	TANKY CARGO	STATE STATE OF		4405865	Soughteen Carles (Carles and Alexan Applicabilities (Carles and Alexan)	A SHARRANTER		A RESIDENCE OF THE PERSON OF T	A PACE SECTION
Pump	1										
Filter Holder	<b>-</b>								-		
Instrumentation	Т						.:			<u> </u>	
MF Flush Vessel											
MF Prime Vessel	1										
MF Filtrate Vessel	<del></del>										
	1										
Agitator MF Wash Vessel	1										
MF Regeneration Vessel	—————————————————————————————————————										_
MF Storage Vessel	T										

.

;

														ľ	
	Filters							Gaskets							Bearings
	Materials					Labor		Materials					Labor		Materials
Equipment Items	Item No.	ģ	Cycle Life	Unit Cost	\$/Cycle	Hours \$	\$/Cycle	Item No.	Qty	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.
									П						
m/acell/Concentration:n2mmea		Mary Edit	inganggang (gapang bananggang ang ang ang ang ang ang ang an	Westernament Street	<b>英語教教</b>		HORIECE HEET	を	1		A SHARE WATER	TO SERVICE STATE OF THE PERSON.	Constitution of the Consti	AKATASATAN AND	DESCRIPTION OF THE PERSON OF
Pump															
Filter Holder						=									
Manifolding					**										
Instrumentation														•	)
MF Flush Vessel															
MF Prime Vessel															
MF Filtrate Vessel															
MF Wash Vessel															_
MF Regeneration Vessel									_						
MF Storage Vessel															
超8度CelliResuspension家家の開始。 関本語の対象		NAME OF TAXABLE PARTY.		STANSON STANSON	C. STATE OF	THE PARTY OF	STATE OF THE PARTY		Name of the last	<b>建筑是安徽省</b>		REAL PROPERTY.		WANTED STATES	BASH CHARLES
Resuspension Vessel										-					
Stir Plate	7						·								
mendellibishupdonmenes	NAME OF TAXABLE PARTY.		DESCRIPTION OF THE PROPERTY OF	W. S. Table S. S. S. S. S. S. S. S. S. S. S. S. S.	OKINETINE.	The second		1.00 mm		ed references in the course of received access of the course of the cour		WANTED SCHOOL		NAMES AND DESCRIPTION OF THE PERSON OF THE P	NAMES.
Cell Disruptor															_
							-								
#10#IBiResuspension:21/8/2####		S CANADA	BARROLD CONTROL CONTROL CONTROL	10000000000000000000000000000000000000	STATE OF THE PARTY		NATURAL DISTRIBUTION OF THE PARTY OF THE PAR				BEAT STATE OF	STATE OF THE PARTY	WAY STATES	STATE STATE	E STATE OF S
Resuspension Vessel		•													
Stir Plate							A CONTRACTOR	minimum and services to				CHARLE WATER	(Greatetrade)	State Transferred	A COMPANY OF SHARE
slymlBiGoncentration型的82面面面	100 C C C C C C C C C C C C C C C C C C		於日本的日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本	の主義を表現る			SOUTH PROPERTY.	A CANADA		Ben grandet and appropria	Name of the last o	Mark Company of the C	Water State States	A CONTRACTOR OF THE PARTY	a Mills Walled Barrier And Ba
MF Wash Vessel															
Pump Filter Holder															
בוומן ו ויסוססו	_		_	_	_	-		_	_		_	_	-	•	•

FIG. 64E

;~

	l														
							Seals							Dells	
					Labor		Materials					Labor		Materials	
Equipment Items	ŧ	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	aty	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Q ty
														-	
NORTHWEST CHARLES IN THE CONTRACT OF THE CONTR	DESCRIPTION OF THE PERSON OF T	SON CARCALANTE CAPITA AVAIL	The control of the	CASSAC STREET, CO.	OPPOSITE STREET, ST.	Tribution of the		記念が変数		Machine Company		Crestina Land	NOT RESERVE	Man Market	STATE OF THE PERSON
WZGCell(Concentration) 22 April 19 Mark 19 April						OCONSESSATING	A CONTRACTOR OF THE CONTRACTOR	REAL PROPERTY.		METERNAMINA	Traces are the same of the sam				
Pump						-									
Manifolding		·							-						
เกรเานาคกเสเอก															
MF Flush Vessel															
MF Prime Vessel															
MF Filtrate Vessel		-							_						
MF Wash Vessel															
MF Regeneration Vessel			-	•											
MF Storage Vessel															
Rescellinesuspension and annual	WATER A	MATA THE REPORT OF THE PARTY OF	THE STATE OF THE S	SPECIFIC REGISTERS OF SPECIFIED		NEW STREET	CHARACTER	THE SEC	CARANA MARKET MA		DATE OF THE PARTY OF	Manuscript 1	CANADA PA	PROPERTY OF THE PERSONS	il and the
Resuspension Vessel															
Stir Plate															
resincellibisruptions systems Cell Disruptor		THE WAR STREET, SAN THE STREET		MINENCOMA MERCENER SELVENSORS					HAUSSAULS NASCARIAN PAREN SERVICES			MAX-X-10T	Markonia manorana	STATISTICS IN A STATE OF THE ST	NAME OF THE PERSON OF THE PERS
Lysate Vessel															
MoalBiResuspensionmo(624 ann a	100	DESTREE BREST SERVICESTRAL BELLEVE	BOTT TO THE PARTY OF THE PARTY	Keekin dabbearen benneun		Secure Contraction of the Contra	THE CHARGE BEARING THE		DESCRIPTION OF THE PROPERTY OF	THE STATE OF THE S	The Research		ATTENNESS OF	AND THE PROPERTY OF	MAN SERVICE
Resuspension Vessel															
Stir Plate			ENTER LANGE				The second second	SA CONTRACTOR		and the same	Sales Sales Sales Sales Sales Sales Sales Sales Sales Sales Sales Sales Sales Sales Sales Sales Sales Sales Sa	A STATE OF THE PARTY OF THE PAR	Managardin Hamasayanda		
MF Wash Vessel															
Pump	<u> </u>														
Filter Holder	_	_	_	_	_	_	_	_			_	_	-		_

FIG. 64F

;;~

													tacicat.		
						Shaffs			-				רממווני		
				Labor		Materials					Labor		Materials		
Equipment Items	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Qt	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	άţ	Cycle Life
Color Regulations and American State (Color Colo	A CHELD TO STATE OF THE PARTY O	Maria de Caractera	alternative designation of the second	SERVICE SERVICE	SERVICE SERVICE	PACTE MANAGEMENT	C. C. C. C. C. C. C. C. C. C. C. C. C. C		STATE OF STA	STATE OF STA	THE STATE OF THE S	SCHOOL STATE	NUMBER STATES	2000	SOUR BUSINESS TO STATE OF STAT
MF Wash Vessel	SECTION SECTIO	The state of the s	according by the control of	ar in the second	The state of the s										
Pump															(
Filter Holder															
Manifolding															
Instrumentation				•											•
MF Flush Vessel															
MF Prime Vessel															
MF Filtrate Vessel															
MF Wash Vessel											•				
MF Regeneration Vessel															
MF Storage Vessel															
ESECOLIROS INSPONDENTALINA	MEDICAL PARTIES	HONE WILLIAM CHECKEN CONTRACTOR	WOOD STORY	MASSAGE	STEER STREET	THE PERSON NAMED IN	W. Harris	ADDRESS OF THE PROPERTY OF THE		STATE STATE OF THE	No. of the last of	THE STATE OF THE S	50 V 10 V 10 V 10 V 10 V 10 V 10 V 10 V	200	
Resuspension Vessel													•		
Stir Plate													·		
M94Celliblaniption market	WARRY TO SERVE THE	NAMES OF STREET OF STREET, STR	THE SHARE PAPE	D. C. C. C. C. C. C. C. C. C. C. C. C. C.	CONTRACTOR OF THE PARTY OF THE		Canada I		THE CONTROL OF THE PERSON NAMED IN	Name of the last	WANTED IN	ARRECT BATTERN	TEMPERATURE AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON AD	1000	THE PARTY OF THE P
Cell Disruptor														-	1
Lysate Vessel															
KOMBIResuspenslonzale	A STATE OF THE STA	REPRESENTATION OF STREET, STRE	<b>GISCHARD</b>	ALCOHOL:	SATURATION S	STANSON CONTRACTOR STANSON STANSON	Name of		NEWSCHOOL STREET	PARTICIPATION OF THE PARTICIPA	TO THE PARTY OF	STATE OF THE PARTY	NAME OF THE PARTY	1900年	REGREGATED BEARDS INDIBIDATION BRUCESTOR
Resuspension Vessel			,												
Stir Plate Stir Plate		CELEBORIES CONTRACTOR	S. P. L. P. L. P. L. L. L. L. L. L. L. L. L. L. L. L. L.	CHEST WATER	THE POST OF THE PARTY OF	CHARLESTEE	100000	With the shift of the	STEEL STEEL STEEL	l statement		TANASCANA I	CRIMINATOR	n Steamen	Section and the section of the secti
MF Wash Vessel	Account of the second of the s	THE PERSON NAMED IN													
Pump						_								·	
Filter Holder	<b>-</b> 1	_	_	_				_	_	_	_		_	_	

FIG. 64 G

					Thermal Media	da					
			Labor		Materials					Labor	
Equipment Items	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Qty	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle
											Company of the Control of the
紹介のCelliconcentration記名表現の内容のでは、	No. of Contract										Merch & Cont.
Pump											
Filter Holder Manifolding											
Instrumentation											
MF Flush Vessel											
MF Prime Vessel					,						
MF Filtrate Vessel		-									
MF Wash Vessel		•									
MF Regeneration Vessel											
MF Storage Vessel											
Resuspension Vessel	A LONG TO SERVICE STATE OF THE	AND SERVICES	MISPARILIE	AND RUBERANDS							CHARLOWN (BLEFFOR) LANGESCH
Stir Plate	•	<u>-</u>									
N9RCelliDistuptionsSavastantes	THE STATES AND	<b>建筑是是</b>	ZZZKOWENE	CONTRACTOR (ARRESTRATION	(1)	No.	Refere Horizonal-Write History and History	Refolkfloorsess	No. of Contraction		CONTRACTOR (GRANTER STORY)
Cell Disruptor											
Lysate Vessel											
(10alBIResuspensionsat@2spans	CHIEVEN STORY	<b>外现分别或</b> 是	NAME OF THE OWNER, OR WHITE OF	BESTELLE STANSFERS	SECTION SECTION		STREET PRESENTATION OF THE STREET	Characteria areas and services indicated in the services in th	WANTED SHEET	THE STATE OF THE S	BINGERBER
Resuspension Vessel		٠.									
Stir Plate	erona de la companya	WORLDS CONTROL	ADDRESS HINDERSON	SCORES SUBSECUCION SUCCESSION	AB	Control of California (Control	STATE OF THE PERSONS	HENCOCKE (MINISTERIOR CONTROL	STATE OF THE PARTY.	MECOSOCIA	STEED STEED STEED
MF Wash Vessel			According to the		信						
Pump											
Filter Holder					_	_				_	_

The supplication of the su

	Filters							Gaskets				-			Dearings
	Materials					Labor		Materials	ſ				Labor		Materials
. Equipment items		έg	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Ωţγ	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.
Manifolding															•
Instrumentation										•					
MF Flush Vessel															,
MF Prime Vessel															
MF Filtrate Vessel						_ <del>_</del>									
MF Dilute Vessel	_														
MF Wash Vessel															
MF Regeneration Vessel															
MF Storage Vessel															
1/4/Renaturation persent meaning	AND THE PERSON	THE STATE OF	CONTRACTOR OF THE CONTRACTOR O	SERVER TRACES	40000000000	B. B. L. S. W. C.	WANTED THE	野などの公長	THE STATE OF	In constant a large in the constant in the constant is the constant in the constant in the constant of the con	CHANGE WATER	TANK TANK TANK	を記る	E THE STATE OF	THE PERSON NAMED IN
Renaturant Vessel															
Stir Plate															T. Co. Aller Co.
M.S. B. UferdExchange ymmissys and same many manys makened and same servers.	SELECTION OF		AND PROPERTY OF THE PARTY OF TH	A A 1000 M 2 10 10 10 10 10 10 10 10 10 10 10 10 10			MACHINE MACHINE MACHINE	NAME OF TAXABLE PARTY.			WANTED WATER	100 March 1975			STORY OF THE PARTY
Pump											_				
Filter Holder Manifolding									•						
Instrumentation				_				·							
UF Flush Vessel															
UF Prime Vessel															
UF Filtrate Vessel															
UF Wash Vessel		• •													
UF Diluent Vessel					,			<u>,</u>							
UF Regeneration Vesset															
UF Storage Vessel	_						<del></del>		_						_

FIG. 64I

;<u>`</u>

							Coole							Belts	
							Scals								
					Labor		Materials					Labor		Materials	
Equipment Items	ð	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Ωtλ	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Qt
Manifolding Instrumentation									·						
MF Flush Vessel															
MF Prime Vessel														_	
MF Filtrate Vessel											_	-			
MF Dilute Vessel															
MF Wash Vessel												•			
MF Regeneration Vessel															
MF Storage Vessel														_	
YAMRenaturadongadassasansa areesa sucrassanata canasanata Basasasa Basasasa Basasasa	1000	ANTERSON PROPERTY.	ACTOR DESCRIPTION	<b>新物质和影响</b>	ALE STATES		NAMES OF TAXABLE PARTY.		STATES OF THE ST	NAMES AND PARTY.	CONTRACTOR CONTRACTOR	ESTREMENT OF	A STATE OF THE STA	NATURE FOR	BOYETCE
Renaturant Vessel										-					
Stir Plate					Section 1		SHEDOWN MANAGED	1000	W) Wall and the same of the sa		Contraction	ere-createred.	SOCIAL STATE OF STATE	DATE PLANTS	CHOCKE
MONEUTOREXCUANGOUS TRANSPORTER Pump		Secretary of the second	A PARTICIAL PROPERTY AND A PARTICIAL PROPERTY	A Maria Paragraphy		Name of the last o	STORY WILLIAM	The Colonia	Mary and State of the State of						
Filter Holder															
Manifolding															
UF Flush Vessel															
UF Prime Vessel															
UF Filtrate Vessel															
UF Wash Vessel															
UF Diluent Vessel							-								
UF Regeneration Vessel								-							
UF Storage Vessel															

THO- 647

Shafts   S														
Materials S/Cycle Iftem No. Qty Cycle Life Unit Cost The Cost Cycle Life Unit Cycle Life Unit Cycle						Shafts						Lubricant		
St.Cycle Item No. City Cycle Life Unit Cost					Labor	 Materials				Labor	-	Materials		
	Equipment Items	Cycle Life	Unit Cost		Hours	Item No.		Cycle Life	Unit Cost		\$/Cycle	Item No.	ģ	Cycle Life
	Manifolding			-										
	Instrumentation													
	MF Flush Vessel		·····								_			
	MF Prime Vessel										. **			
	MF Filtrate Vessel						<u> </u>							
	MF Dilute Vessel													
	MF Wash Vessel							,,						
	MF Regeneration Vessel			-										
	MF Storage Vessel													
	M4mRenaturation measurement	STATE OF THE PARTY	SECTION OF SECTION	SAMPLE SAMPLES	OBS ZENERA	<b>建筑的</b>	2000	STATE STATE STATE	DESTRUCTED IN	2000 C 10	STATE OF THE PARTY	CHECK STATES	SEE 13.18	地の世界の政治
	Renaturant Vessel													
	Stir Plate							The second second second		the state of the s				
on isei ssel ssel ssel ition Vessel	(15至BuffenExchange)	THE TAXABLE PARTY.	ARCHIOLOGICAL STREET	A MANAGEMENT			N N N N N N N N N N N N N N N N N N N			No. of the last of	I SANCES I SANCES	MINGSHEEMA	1000	KIND THE PARTY OF
ssel ssel ssel ssel ssel tion Vessel	Horas Holder													
tion  ssei  essei  fessei  essei  vessei  Vessei  Vessei  Vessei	Manifolding									-	•			(T
Vessel	Instrumentation													
Vessel	UF Flush Vessel	<b>.</b>	i											)
Vessel	UF Prime Vessel							<u>.</u>						
Vessel	UF Filtrate Vessel													
Vessel	UF Wash Vessel		٠.							•			-	
·	UF Dituent Vessel	·				 								
UF Storage Vessel	UF Regeneration Vessel										_			
	UF Storage Vessel					 		<del></del>		 	_			

FIG. 64 K

					I nermai Media	gga					
			Labor		Materials					Labor	
Equipment Items	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item:No.	Qty.	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle
Manifolding											
Instrumentation											
MF Flush Vessei										·	-
MF Prime Vessel											
MF Filtrate Vessel								_			
MF Dilute Vessel		-							_		
MF Wash Vessel								•			
MF Regeneration Vessel											
MF Storage Vessel											
引作服Renaturation 加斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯	<b>安阳时时期周四周时</b>	SECTION SECTION	AND STREET	Management Appropriate	<b>建筑以明代</b>		ELECTRICAL PROPERTY.			B BATTER THE	National Property of the Party
Renaturant Vessel					:						
Stir Plate						A STATE OF THE PARTY OF THE PAR		Section (Construction of the Construction of t	- Transmission	30,000,000	THE REPORT OF
kisaBuffertExchange managama	oranisans massassa	AND AND AND AND AND AND AND AND AND AND	SECTION SECTIO	active section in		OCCUPATION OF THE PARTY	THE WASHINGTON	March way House	04 W (4 St Car) 198	and Marie Land	
Filter Holder											
Manifolding											
Instrumentation											
UF Flush Vessel	•										•
UF Prime Vessel			_								
UF Filtrate Vessel											
UF Wash Vessel										<del>-</del> .	
UF Diluent Vessel		· ·									
UF Regeneration Vessel	<b>.</b>										
UF Storage Vessel						<del></del> -		_			<del></del>

1+0.07+

;<del>-</del>

															o de la constante de la consta
	Filters							Gaskets							chillips
	Materials		-			Labor		Materials					Labor		Materials
Equipment Items	Item No.	ģ	Cycle Life	Unit Cost	\$/Cycle		\$/Cycle	Item No.	Qty	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.
UF Waste Vessel			A CALLES AND A CAL		The State of the S		SANGARA MEMBERSA	A STANKE	202250	200		ESCRITATION OF	STATE OF THE	MARKETER	THE CONTRACTOR OF THE PARTY OF
以6成Chromatographyのiatemarkeita Chromatography Column			The state of the s	- Carte   Cart										<u> </u>	
Pump Inst. & Control System									*						
Manifolding Equilibration Vessel													<u></u>		
Wash Vessel								,							
Eluent Vessel	-														
Regenerate Vessel															
Storage Vessel	,														
Waste Vessel (1)															
Product Vessel										·					
Waste Vessel (2)	·										94	MILLEN TO THE PROPERTY OF THE	C. C. C. C. C. C. C. C. C. C. C. C. C. C	N PETERSON CONTRACTOR	STEER STATE
រៀវស់Chromatographyi2វក្មនាគឺជាមា Chromatography Column			September 1	AN TENNET SAINTS	本 <b>和政党的</b>		S SETTEMBER STATES	TOTALINEES							
Pump	- <del>   </del>														
Inst. & Control System				<del></del>			<u></u> -								
Manifolding	•														
Equilibration Vessel															
Wash Vessel									·						
Eluent Vessel						•							<del></del>		
Regenerate Vessel	_		<del></del>			<del></del>				_				_	_
												-			

FIG. 64H

, ,~

							Seals							Belts	
					Labor		Materials					Labor		Materials	
Equipment Items	à	Cycle Life	Unit Cost	\$/Cycle		\$/Cycle	Item No.	Qty	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	ğ
UF Waste Vessel															
si 6a Chromatographya (gastastas) naganya (arphysisyana) asanaa	<b>医</b>	一种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种种	<b>新祖祖宋教宗祖</b>	THE PROPERTY OF THE PROPERTY O	#EDAYOR:		<b>新地球体験</b>   新地球体	医医量	Polytypens servenesson senergrouses exceptions		S SECTION STATES	STATE OF STA	SHOWARDER S	BULLERAN	185 E 184
Chromatography Column			-												
Pump															
Inst. & Control System															
Manifolding															
Equilibration Vessel															
Wash Vessel															
Eluent Vessel															
Regenerate Vessel			-										_		
Storage Vessel															
Waste Vessel (1)															
Product Vessel			_	•••					•						
Waste Vessel (2)															
47/6 Chromatographys28年8年8年8日	TO SECOND	MERCY CHIMODELEN MENERACIA SPECIAL	S SWIPTERSON S. R.	STREET STREET	MINESON PROPERTY.	Maria Salahan	AND PARTY OF THE PARTY.	300	SPANSON STATES	S BETTER TOTAL STREET		A CHARLES	REPRESENTATION OF THE PROPERTY	CENTRAL PARTY	R WHEN
Pump							-								
inst. & Control System							-								
Manifolding	<u>,</u>														_
Equilibration Vessel		-										_			
Wash Vessel	,														
Eluent Vessel	T	•													
Regenerate Vessel	_		<del>.</del> _	<u>.</u>		_				_	<del></del>				_
											)	`	4		

Nr9 5HJ

						Shafts							Lubricant		
				Labor		Materials					Labor		Materials		
Equipment Items	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Q,	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	δίζ	Cycle Life
UF Waste Vessel															
和各班Chromatography起時發展後到經過每時發展的發展的	<b>好好那么你</b>		STATE STATE OF THE PARTY.	BEN SAMO!		HUMAN MARKET		Paramental memberatura (parament monsolp)		September 1	NAME OF TAXABLE PARTY.	STATESTAL BUILDING STATES	Section 1		THE PERSON NAMED IN
Chromatography Column															
Pump															
Inst. & Control System					•								_		•
Manifolding															
Equilibration Vessel						-									
Wash Vessel		~													
Eluent Vessel														<u></u>	
Recenerate Vessel															
Storage Vessel															
Waste Vessel (1)															
Product Vessel									_						
Waste Vessel (2)															
กักสอกเดเกลtography/24เลขาสายชาย	DESTRUCTION OF THE PROPERTY OF	TO THE STATE OF THE PARTY.		TOTAL PARTY	STATE STATE OF	(MARIANA SERVE	- ORAKUMI	Mensylvania (except lexination) (except entrance)	SPECIFICATION OF THE PERSON OF	A STATE OF S	STATE STATE OF THE PARTY OF THE	ANNUAL PRINCIPARY	I DESTRUCTION OF THE PROPERTY		Maritim (Maritim)
Chromatography Column															)
Pump										_					
Inst. & Control System								-							
Manifolding															
Equilibration Vessel															
Wash Vessel															
Eluent Vessel														_	
Regenerate Vessel											_		_	_	

FIG. 640

្រា ្នាឝផ្សាព្រភាឌ្នាវ្រាវក្រុក្សឧក្ខារី ខ្មែងស្រុះ Microbial Fermentation

					Thomas Me	٤					
					Heiliai Media	g					
			Labor		Materials					Labor	
Equipment Items	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Q Čţ	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle
UF Waste Vessel											
引6版Ghromatography对某种新期中国	Hedericans Robbesh Karneschi automatica	K. EMPHORES.	NAME OF THE PERSON	Transfer Medical	STEED SHEET		CHARLES WHEN SHOWING	STATE OF STA			
Chromatography Column											
Pump											
Inst. & Control System											
Manifolding											
Equilibration Vessel					_			,			
Wash Vessel								•			
Eluent Vessel											
Regenerate Vessel											
Storage Vessel											
Waste Vessel (1)											
Product Vessel											
Waste Vessel (2)											
A ARCHIOMATOGRAPHY ZRAMANORA Chromatography Column	TOTAL STATE OF THE	THE PROPERTY OF THE PARTY OF TH	HEELVAGE	Secondinates		CON CO	ASSESSMENT OF THE PROPERTY OF				
Pump											
Inst. & Control System		<del></del>									
Manifolding											
Equilibration Vessel			_								
Wash Vessel											
Eluent Vessel											
Regenerate Vessel											

FIG. 64P

								Gaskets							Bearings
	Filters							Cashots							
	Materials					Labor		Materials	ļ				Labor		Materials
Equipment Items	Item No.	άς	Cycle Life	Unit Cost	\$/Cycle		\$/Cycle	Item No.	Qty	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.
Storage Vessel	<u> </u>												-		
Waste Vessel (1)															_
Product Vessel															
Waste Vessel (2)															
引息。BufferiExchange加速如何的影響	透射的研究能		ASSESSED BELLEVIOUS RECORDS	THE RESIDENCE OF THE PARTY OF T	National States	SEEKS FEE	<b>新期 第5000000   新900000000  </b>			STATE STATE OF THE	NAMES OF THE PARTY	STANSPORTED COLORS	i somo somo	STANFARE STAR	CAPETO BENERALISM
Pump															
Manifoldina															
Instrumentation															
UF Flush Vessel															
UF Prime Vessel													· <u>-</u>		
UF Filtrate Vessel				•											
UF Wash Vessel															
UF Diluent Vessel	_	-													
UF Regeneration Vessel	<u>,</u>						. •								
UF Storage Vessel										•					
UF Waste Vessel	<b>.</b>														
119組Chromatography23時報報報報		是沒是	Protection (Section (Sections)		CONTRACTOR OF THE SEASON STATES		援	HAPPEN THE PARTY OF THE PROPERTY OF		andresis series	E E	THE BOOK AND THE REAL PROPERTY OF THE PERSON NAMED IN COLUMN TWO IN COLUMN TO THE PERSON NAMED I	AN MERCENSEN	DESTRUCTURE OF THE PARTY OF THE	ができないのでは
Ciliotiatography Commi															
Pump Inst. & Control System												-			
Manifolding Equilibration Vessel				_											
		_	_	_		_	_	_	_			_	_	_	_

PTG. 640

;'~

							1							Relts	
							Seals								
					Labor		Materials	ŀ				Labor		Materials	
Equipment Items Q	Š	Cycle Life	Unit Cost	\$/Cycle		\$/Cycle	Item No.	άţλ	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	oţ,
Storage Vessel								"							
Waste Vessel (1)															
Product Vessel															
Waste Vessel (2)															
以89BuffenExchangeamanaage			REGISTRESSON	SONTH INTERESTRIES		REPRESENTATION.	elicientales	Transau.	THE STATE OF THE STATE OF	體	MATCHER MARKETAL TOWN STATE STATES	THE STATE OF THE S	STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET,	NAMES AND PARTY	00 EN EN EN
Pump			<u></u>										-		
Filter Holder Manifolding		_													
Instrumentation															
UF Flush Vessel															
UF Prime Vessel		_													
UF Filtrate Vessel										_	-				
UF Wash Vessel															
UF Diluent Vessel											-				
UF Regeneration Vessel							,•								
UF Storage Vessel															
UF Waste Vessel															
的多类。Chromatographys3排除的高架等系統認識。Impromptessee Impropried	No.	S REPORT OF THE	THE PROPERTY OF		SALPH SEE		PARTICULAR RATER DIVIN	NAME OF TAXABLE PARTY.	MAN STATE OF THE S			STATE OF	<b>经价值数</b>	STATE STATES	AND THE REAL PROPERTY.
Chromatography Column					,										
Pump											-				_
Inst. & Control System															
Manifolding													•		
Equilibration Vessel															
		_	_	_	_	<u>.</u>	_	_		_	_	-		•	

TTC (01 P

;<u>`</u>~

						Shafts							Lubricant		:
				Labor		Materials					Labor		Materials		
Equipment Items	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Oty	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Ωty	Cycle Life
Storage Vessel		· <u> </u>											-		
Waste Vessel (1)															
Product Vessel															
Waste Vessel (2)															): I
扩8界BuffenExchangeagastation	STANDARD BY BEAUTIFULD	PASSES CHARACTER	REPORT OF THE PROPERTY OF THE	EXECUTE:	<b>ARCHITECT</b>	STATE OF THE PARTY.	MATERIAL STATES	DECTROPRESENT CO.	CT STREET	Transfer.	and Santacement to the	MEKEN	KENSHEDER TOT		RESERVE PROPREHENSING
Pump															
Filter Holder Manifolding															
Instrumentation															
UF Flush Vessel															
UF Prime Vessel															
UF Filtrate Vessel															
UF Wash Vessel															
UF Diluent Vessel															
UF Regeneration Vessel															
UF Storage Vessel	•					<u> </u>									): 
UF Waste Vessel	-														
的现在hromatographyz38gistestests	ACCOUNTS SEE SECTION SECTION SECTION	MINISTER STATES	P ESSENTING	DAY STATE	Andrew Co.	MONTH	82,228	STATE OF STREET	ALTA STATE OF STATE	EFECT STATE			EDER CHANGE STREET CHANGE	STATE OF	TENERAL PRINCIPAL
Chromatography Column															
Pump															
Inst. & Control System															
Manifolding															
Equilibration Vessel															
		_	_	_	<b></b>	_	_		_	_	_	<del>-</del>	_	_	

FIG. 64 S

...

Carbor   C						Themal Media	5					
Company   Comp												
Unit Cost   \$fOycle   Hours   \$fOycle   Hem. No.   Qty   Oycle Life   Unit Cost   \$fOycle   Hours   \$fOycle   Hours   \$fOycle Life   Unit Cost   \$fOycle   Hours   \$fOycle   Hours   \$fOycle Life   Unit Cost   \$fOycle   Hours   \$fOycle   Hours   \$fOycle Life   Unit Cost   \$fOycle   Hours   \$fOycle				Labor		Materials					Labor	
(7)   (2)   (2)   (3)   (4)	Equipment Items	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Qty	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle
(7)  In the control of the control o												
(1) (2) (2) (3) (4) (5) (5) (6) (7) (8) (9) (9) (9) (9) (9) (9) (9) (9) (9) (9	Storage Vessel											
1   1   1   1   1   1   1   1   1   1	Waste Vessel (1)		<u>.</u>									
C   C   C   C   C   C   C   C   C   C	Product Vessel											
The control of the co	Waste Vessel (2)											
See! See! Con Vesse! Shystem Ny Column Ny Column System System See: See: See: See: See: See: See: Se	INCOMPER	ETPONESSEE SE	SHARKSTARKS	<b>西部</b>	8	STATE OF	SKEN SKEN			TICS CONTROL	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	THE PROPERTY.
	Filter Holder Manifolding											
	Instrumentation								· ·			
	UF Flush Vessel											
	UF Prime Vessel								-	<u> </u>		·-·-
	UF Filtrate Vessel											
	UF Wash Vessel						-					
	UF Diluent Vessel											
	UF Regeneration Vessel							. •				
	UF Storage Vessel								·	•		
AND SANGER OF THE PROPERTY OF	UF Waste Vessel						-			·		
Control Iding ration V	វៀនChromatographyនិងត្នាមាននេះ Chromatography Column	Market Services			(\$5.00 to 10.00)		なまる		X Name of the least		SAMPRIME O	1201
Control Iding ration V	Pump		٠.									
2	Control					·						
-	Manifolding		-									
	2											

FIG. 64T

	Filters							Gaskets							Bearings
	Materials					Labor		Materials					Labor		Materials
Equipment Items	Item No.	ğ	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Qty	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.
Wash Vessel															
Eluent Vessel				· · · · · · · · · · · · · · · · · · ·			·								
Regenerate Vessel															
Storage Vessel												•			
Waste Vessel (1)															
Product Vessel								•							
Waste Vessel (2)															
20gBufferiExchangewarminimi	ACCEPTANCE OF THE PERSONS ASSESSED.		CONTRIBUTION BEADING AND AND CONTRIBUTION OF STREET	<b>新国际的特殊的</b>	of the state of th	<b>基金</b>	A STANDARD SAND	I KA BENERATAN MATAKSI		errent consideration of the constant of the co	- CONTRACTOR STATE	a propostacento.	TOTAL PROPERTY.	<b>制心球器配送</b>	NAMES OF THE PARTY
Pump				<del>.</del>											
Manifolding									,						
Instrumentation					·										
UF Flush Vessel	1														
UF Prime Vessel	- <b>F</b>								•						
UF Filtrate Vessel															
UF Wash Vessel	<b></b>		-	<u> </u>											į.
UF Diluent Vessel	- <del> </del>			<u> </u>											
UF Regeneration Vessel	T								<u> </u>						
UF Storage Vessel	· ·		<del></del>												
UF Waste Vessel			· .												
2個Chromatographykkmressesses Chromatography Column		- F		Marci	ENERGINES OFFICERS			AND STATES	1818 A		ATTO EXCEPTION (CONTRACTOR DESCRIPTION)		A PROPERTY OF THE PROPERTY OF		WAS STATES
Pump	<del>, ,</del>												_		

THG. 64 C

							Spals							Belts	
					1 shor		Materials					Labor		Materials	
Equipment items	ð	Cycle Life	Unit Cost	\$/Cycle		\$/Cycle		Ωţζ	Cycle Life	Unit Cost	\$/Cycle		\$/Cycle	Item No.	δţ
	$oldsymbol{\perp}$														
Wash Vessel	<u> </u>				·										
Eluent Vessel		-													
Regenerate Vessel												•			
Storage Vessel															
Waste Vessel (1)	T														
Product Vessel			**							-					
Waste Vessel (2)								, .							
20数BufferiExchange繁建的数据数据	ARTOR BUCKE	(8) <b>(地域研究的概念) 医</b>	ESTREMENT NAMES	CHANG SCHOOLS SECTION BY CONTRACT	antifer a	NAPATION AND A	<b>加护和存储机</b>	NO.	With the Sales and	Barretten state	B PERSONAL STREET, ST.	STREET	DATE STREET	DEPOSITION OF THE PERSON OF TH	Settence
Filter Holder	_														
Instrumentation	<u> </u>														
UF Flush Vessel	-	·	·										_		
	<del>_</del>														
UF Prime Vessel										····					
UF Filtrate Vessel	·									_	_				
UF Wash Vessel	1						. •								
UF Diluent Vessel										· -					
UF Regeneration Vessel	<del></del>														
UF Storage Vessel	T -			<del>-</del> -											
UF Waste Vessel	<del></del>														
於信息Chromatographys45程表的存在的 Chromatography Column				NUTRIN INCREMENTARY				TANK SAME	244500	AND SECTION OF THE PROPERTY OF	E STANDARD DE	SELECTION OF THE PERSON OF THE	Right Street	IN THE PROPERTY OF	THE PERSON
Pump															
	1	-	-	•			,								

FIG. 64V

						Shafts							Lubricant		
				labor		Materials					Labor		Materials		
Equipment items	Cycle Life	Unit Cost	\$/Cycle		\$/Cycle	Item No.	λέσ	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Qty	Cycle Life
Wash Vessel					_ <b></b>										
Eluent Vessel															
Regenerate Vessel							•			·					
Storage Vessel															
Waste Vessel (1)														•	
Product Vessel												·			
Waste Vessel (2)															
(2) m Buffari Exchange attentions	MANAGEMENT SECTION STATES SHEWING	TARRACTO STATES	* CONTRACTING	22.24	STREET, STREET,	200	10000000000000000000000000000000000000	CASTON STREET CONTINUES OF THE POST	OCCUPATION OF	R CAMPANIAN	ENGRAPSIA STOTE	STATES AND THE STATES OF	(新年公司)	Permisers	BESTERN EXELECT
Pump	ALL TO SELECTION OF THE PARTY O														
· Filter Holder											_				
Manifolding										<u>.</u>					
Instrumentation															
UF Flush Vessel														•	
UF Prime Vessel															
UF Filtrate Vessel										<del></del> -					
UF Wash Vessel							-								•
UF Diluent Vessel								•		•••					
UF Regeneration Vessel															
UF Storage Vessel		-													
UF Waste Vessel														~	
12 leachtomatographys4samasasa kananahanan mayadhasasa kanasa	SATHER REPORTER	TOTAL PROPERTY OF	WINNESS OF STREET	CONTROL OF	<b>对郑明朝,如何即约翰</b>	S STATES SEE	S SERVICE SE	NAME OF STREET	R SETSEMBRY PER		2000	CONTRACTOR BURNING MEMBERS OF THE SECOND STREET, SE	New Section 1	Di Peresion	CENTRAL PROPERTY.
Chromatography Column							_								
Pump	<del>,</del> 1												_		

FIG. 64 W

FIG. 64X

					Thermal Media	e B					
			Labor		Materials					Labor	
Equipment Items	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.	Ωty	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle
									-		
Wash Vessel											
Eluent Vessel	_										
Regenerate Vessel											
Storage Vessel										_	
Waste Vessel (1)											
Product Vessel								,			
Waste Vessel (2)											
20gBufferiExchange文献和数据数据	TATAL SHOW SHOUTH	SANCTACTION	MOCKET	OPHINESS	Bearing the second		ELECTRICAL STREET, SE	<b>医软骨部外</b>	15	TECHNOLOGY ECONOMICS	TOTAL STATES OF
Pump											
Filter Holder											
Manifolding											
Instrumentation											
UF Flush Vessel											
UF Prime Vessel											
UF Filtrate Vessel							-				
UF Wash Vessel										_	
UF Diluent Vessel										·	_
UF Regeneration Vessel											
UF Storage Vessel											
UF Waste Vessel											
2分配Chromatography24年中间	CONTRACTOR		il (declarate)	THE PARTICULAR	mental kanasara mankaran manasara lenam		व्यवस्था व्यवस्था व्यवस्था व्यवस्था	Salara de Salara	TERVESION	Takes and the	STATE OF STA
Chromatography Column									•		
Pump	<del>1</del>							<u> </u>			_

ា េ Equipment Maintenace Table -Microbial Fermentation

Equipment Maintenace Table - Microbial Fermentation

-	Equipment N
	Maintenace T
	Table - N
	crobial F
	/licrobial Fermentation

												_	Belts
			١	Labor	Ma	Materials					Labor	2	Materials
Edulpillelit iteliis aty	Cycle Life	Unit Cost	\$/Cycle H	Hours \$/C	\$/Cycle Ite	1	Qty Cyc	Cycle Life	Unit Cost	\$/Cycle	Hours	\$/Cycle	Item No.
Inst. & Control System													
Manifolding													
Equilibration Vessel				<u> </u>									
Wash Vessel							1100						
Eluent Vessel	,												
Regenerate Vessel													
Storage Vessel		-											
Waste Vessel (1)							·						
Product Vessel												·	
Waste Vessel (2)													
22g  Start  0] E   tration)	N.C. CHROSPANN	MERCHANISME	A LEGISLANDS WHEN					<b>新型器</b>	NAME OF TAXABLE STATES	PARKET	形器计院组		<b>加尔斯拉斯 附近常加州北美州</b>
Pump													
Manifolding			-		-				٠				
Instrumentation													
MF Flush Vessel			-										
MF Prime Vessel													
MF Filtrate Vessel													
MF Wash Vessel				<del></del> .									

MF Wash Vessel	MF Filtrate Vessel	MF Prime Vessel	MF Flush Vessel	Instrumentation	Manifolding	Filter Holder	Pump	22次StadioにTitratioの数据認識を表現を表現を表現を表現を表現を表現を表現を表現を表現を表現を表現を表現を表現を	Waste Vessel (2)	Product Vessel	Waste Vessel (1)	Storage Vessel	Regenerate Vessel	Eluent Vessel	Wash Vessel	Equilibration Vessel	Manifolding	Inst. & Control System	Equipment Items		
		1	<b>.</b>		1_	<u> </u>					1	1			1		LI		Cycle Life		
			·																Unit Cost		
	٠							AND THE PARTY OF											\$/Cycle		
							<u>.</u>												Hours \$/	Labor	
													, 						\$/Cycle It	3	S
				-														-	Item No.	Materials	Shafts
								STEEL COLUMN				•							Qty Cyc		
							_	到 <b>***</b>											Cycle Life		
																			Unit Cost		
	****		•				•	THE PROPERTY OF THE PROPERTY O				_	,	-					\$/Cycle		
					-			200 E											Hours	Labor	
								United States											\$/Cycle		
															-				Item No.	Materials	Lubricant
				"	_						-								Qty		
			:																Cycle Life		

١,٥
ļ: <b>±</b>
13
13
<b>:</b> ]
(j
Ü
<b>#</b> }
n 11 <b>2</b>
(A
(ñ  ÷

RECORD   Part	Inst. & Control System  Manifolding Equilibration Vessel  Wash Vessel  Eluent Vessel  Regenerate Vessel  Storage Vessel  Vaste Vessel (1)  Product Vessel (2)	Equipment Items	
<b>经现在的</b>		Unit Cost	
· .		\$/Cycle	
		Labor	
TO SHOULD IN THE		\$/Cycle	
新建2000年1000年100日		Materials Item No.	Thermal Media
**************************************			edia
<b>经验证</b>		Cycle Life	
· · · · · · · · · · · · · · · · · · ·		Unit Cost	
R BASIS TO SAN		\$/Cycle	
NO PERSONAL PROPERTY OF THE PERSONAL PROPERTY		Labor	
· 的形式处理和形式被	·	\$/Cycle	

FIG. 64AB

## Master Process Parameters Table - Biopharmaceutical

			1		Group 2	վար վար կար հայ իր կար կար Ռոսօ 2		Group 3
		Group 1	1				Parameter	Soln.
and contract of the	Parameter	Soln.		Parameter	Soln.			5
Inoculum Prep	Number of Flasks Media Volume/Flask		2 0.25 Llen	Temperature Agitetion Duration		37 C 200 RPM 18 Hours	Final OO	<u>.</u>
Flask Growth	Scale Up Ratio Media Volume/Flask		10 Fold 1,25 L	Temperature Agitadon Duration		37 C 200 Hours 18 RPM	Final OD	2):
Fermentation Production	Scale Up Ratio Fermentor Working Volume Antibern A Antibern B Base	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	10 Fold SOO Liters 1 M/L 1 M/L 5 M/L 5 M/L	Growth Temperature Agitation Sparge Rate Back Pressure Total Duration	x .	37 Hours 1 HP/100L 1.5 VVM 6 PSIQ 21 Hrs	Final OD Ory Call Mass Product Concentration CIP	12 8.86 Gms TDCMA. 0.3 Gms ProductA. Y
Duinel seeding	Acid Number of Ampules Volume Per Ampule Saring Cell Oensity Ampule Spil Raulo Culture Vassel Type Fear Volume		2 2 2 2 2 2 M 2 2 M 2 2 M 2 2 M 2 M 2 M	Serum Content Feed Rate Days to Confluence		2.034. Fatal Bovine Sarum 1 Feed per vessel per 2 Days 2 Days	Amplification Factor	100 <b>%</b>
Cutture Vessel Split	Vessel Spir Ratio New Vessel Type Feed Volume Senum Content		2 RB 100 Mi 2.0% Fetal Bovine Serum	Feed Rate Days to Confluence		1 Feed per vessel per 2 Days 2 Days	Amplification Fector	<b>*</b>
Spinner Flask Seeding	Flask Feed Volume Vesselfrask Ratio "Carder Density Number of PBS Washs Number of Media Washs No. of Media Washs		4 Ulen 0.1 L Celtul. Flask 5 Gm/Ller 1 1 2 FBS	Serum Content Feed Rate Days to Confluence		2,0% Fetal Bovine Serum 1 Feed per vessel per 2 Days 2 Days	Amplification Factor	100%
Biosynthesis Bionsator Preparation (Stimed Tank Resctor)	Reactor Feed Volume SpinnerReactor Ratio uCarder Density Number of PBS Westits Number of Media Westits No. of Media Westits		500 Liters 8.3 Gm/Liter 2 2	Serum Content Feed Rate Days to Confuence Serum Free Media Washes		2.0% Fetal Bovine Serum 1 Feed per vassel per 2 Days 10 Days	Product Concern. Total Protein Concern.	0.125 Mg TPMI 0.126 Mg TPMI 500% Litera
Biosynthesis Bioresctor Proparation (Hollow Fiber Reactor)	Reactor Feed Volume Number of PGS Weshs Number of Media Washs No. of Media/Serum Washs Serum Content		100 Llers 2 2 2 2 2.0% Felsi Bovine Serum	Number of Reactors Feed Rate Days to Confluence		1 Feed per vessel per 1 Days 10 Days	First of Concentration Total Protein Concen.	25 Mg Produ. 0.125 Mg TPMI
Biosynthesis Biorescor Preparedon (Fluidized Bed Reactor)	Reactor Feed Volume UCCertler Density Number of PBS Weshs Number of Media Weshs No. of Media/Sorum Weshs Serum Content	<u> </u>	Llien Gma/L	Number of Resctors Feed Rate Days to Confluence		1 Feed per vessel per 1 Days 10 Days	Product Concentration Total Protein Concen.	0.125 Mg TP/MI
T10 Initial seeding	Number of Ampules Volume Per Ampule Sarding Cell Density Ampule Spiti Retio		2 Mi 2 Mi 300,000 CeftsAil 1 Vessels/Ampule	Serum Content Feed Rate Days to Confluence		2.0% Fetal Bovine Serum 1 Feed per vessel per 2 Days 2 Days	Amplification Factor	<u> </u>

Master Process Parameters Table - Blopharmaceutical

					-	Group 3
		Group 1		1000	٠	
Unit Operation Type	Parameter Sofn.		Parameter 80	Soln.	Parameter Soln.	
	Cutture Vessel Type Feed Volume	Roll. Bot. 100 Mil	PBS Washes Trypsin Whah	200 MI 100 MI		
Culture Vessel Split	Vessel Spill Relic New Vessel Type Feed Volume Serum Content	RB 100 Mi 2.0% Fetal Bovine Serum	Feed Raie Days to Confluence PBS Weahes Trysin Weath	1 Feed per vessel per 2 Days 2 Days 200 MI 100 MI	Amplification Factor	100%
Spirner Flesk Spiit	Flask Feed Volume VosselFlask Ratio uCarder Density Number of PBS Washs Number of Media Washs Number of Media Washs No, of Media/Senum Washs	4 Liters 0.1 L Collust, Flesk 5 Gm/Liter 1	Serum Content Feed Rate Days to Confluence	2.0% Fetal Bovins Serum 1 Feed per vessel per 2 Days 2 Days	Amplification Factor	100%
Biosynthesis Biorsactor Properation (Stirned Tank Reactor)	Reactor Feed Volume Spinner/Reactor Ratio u/Carrier Density Number of PBS Weshs Number of Media Weshs No. of Media/Serum Weshs	500 Llers 8.3 5 Gn/Ller 2	Sarum Content Feed Rate Days to Confluence Sarum Free Media Washes	2.0% Fatal Bowine Serum 1 Feed per vessel per 2 Days 10 Days 2	Product Concentration Total Protein Concen.	2500% Mg Prodi. 0.125 Mg TP/MI
Biosynthesis Bioresctor Preparation (Fluidized Bed Reactor)	Reactor Feed Volume UCanfer Densily Number of PBS Washs Number of Media Washs No. of Media/Serum Washs Serum Content	Ulen Gms/L	Number of Reactors Feed Rate Days to Confluence	1 Feed per vessel per : 1 Days 10 Days	Product Concentration Total Protein Concen.	2500% Mg Prodi. 0.125 Mg TP/MI
initial Coupling	Flask Feed Volume VesseyFlask Radio Commer Density Number of PBS Washs Number of Media Washs No. of Media/Sorum Washs	4 Uters 0.1 L Cellul Flask 5 Gm/Ller 2 1 1 2 FBS	Serum Conflett Feed Rate Days to Confluence	2.0% Fetal Borine Serum 1 Feed per vassel per 2 Days 2 Days	Amplikation Factor	±00.⊁
Additional Coupling	Reactor Feed Volume Spinner/Reactor Ratio Coemfer Denaily Number of PBS Weans Number of Media Waans No. of Media/Serum Washs	500 Liters 8.3 5 Gm/Liter 2 2	Serum Content Feed Rate Days to Confluence Serum Free Media Washes	2.0% Fatal Bordne Serum 1 Feed per vassel per 2 Days 10 Days 2	Product Concentration Total Protein Concen.	2500% Mg Prodit. 0.125 Mg TPMI
Peptide Cleavage	Reactor Feed Volume Number of PBS Wesths Number of Media Washs · No. of Media/Sarum Washs Serum Contont	100 Liters 2 2 2 2 2 2 2 2 2.0% Fatal Bovine Serum	Number of Reactors Feed Rate Days to Confluence	1 Feed per vessel per 1 Days 10 Days	Hanest Volume Product Concentration Total Protein Concen.	500% Litera 25 Mg Prod/L 0.125 Mg TP/Mi
Tissue Thawing	Cruce Proct Yeld Environmental Temperature Thew Oursion	25 Gm Crude Prod./Kg Tissue 25 C 16 Hours	Contaminant Protein Conc.	100 GmL	Temperature Regulation CIP SIP	<b>&gt;&gt;&gt;</b>
Homogenizellon	Crude Prduct Yelid Liquid/Solid Retio Hommogenizer Type Hommogenizer Type Energy Input Duration	25 Gm Crude Prod Mg Tissue 10 L Schulon/Kg Tissue 4 C RS 200 HP/100L/Hr 4 Hours	Contaminant Protein Conc.	100 Gm.L	Temperatur Regulation CIP SIP	<b>&gt;&gt;&gt;</b>
T20 Liquid Thewing	+				Amplification Factor	100%

Master Process Parameters Table - Blophermacoudcal

Cont. of the second cont. of the second cont. of the second cont. Of the s

7								· · · · · · · · · · · · · · · · · · ·				
Group 3				*\$56 **>	\$\$\$ > \	89.8 **	85% 7 × ×	*\$60 }	*\$60 **>	\$50 50 50 50 50 50 50 50 50 50 50 50 50 5	\$\$6.0 >>	\$58 7.
g	Ŀ	Soh										
		Parameter		Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP	Step Recovery of Product Step Recovery of T.P. Temperature Regulation C.P.	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP SIP	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP SIP	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP
2				0.25 Kg/L 4 C 0.5 Hours 2 Hours	0.25 U. 4 C 0.5 Hours 2 Hours	0.25 Kg/L 4 C 0.5 Hours 2 Hours	0.25 U. 4 C 0.5 Hours 2 Hours	2 USF 2 USF 10 Fod 0.5 USF 1 USF 2 USF	10,000 X G 60 Mindes 30 X Vol. Reduction 0.2 X System Vold Volume	10,000 X G 30 Minutes 0,002 Vet, Reduction 1.5 X System Void Volume	10000 X 0 30 Mindes 16 X Vol. Reduction 1.6 X System Vold Volume	10000 X G 30 Minutes 18 X Vol. Reduction 1.5 X System Vold Volume
Group 2		Soln.		-								
		Parameter		Kgms of RespenVLiers Produ Temperature Addition Time Additional Mix Time	Liera Reagen/Liera Product Temperature Addition Time Additional Mix Time	Kgms of Resgent/Lilers Produ Temperature Addition Time Additional Mix Time	Litera RespenVillera Product Temperature Addition Time Additional Mix Time	Flush Prime Prime Vocabration Factor Wash Regenerate Store	RCF Time Volume Reduction Wash Volume	RCF Time Volume Reduction Wash Volume	RCF Time Volume Reduction West Volume	RCF Time Volume Reduction Wash Volume
			-	7	¥ "	 Y	<b>3</b>	0.2 Micron 11 LOSFMR at 40 Paig et 4 C 400 Libra/SF 1 HR	5 Uen	6 Lien	0 Ulen	6 Liters
, c		Soln.										
		Parameter		Reagent Conceiration	Respont	Reagent	Reagent Concerration	Porosity Average Flux Rate Total Throughput:	System Vold Volume	System Void Volume	System Vold Volume	System Void Volume
		Unit Operation Type		T21 Product Ppt by Solids	722 Product Ppt by Liquids (	723 Contaminant Ppt by Solids 6	724 Contaminent Ppt by Liquids 6	Tangential Flow MF	778 Continuous Centritugation Solids Harresst	Continuous Centrihogation Supermatant Hervest	728 Diluúen	729 Batch Centrilugation Solida Harvest

## Master Process Parameters Table - Blopharmaceutical

		Group 1	1,1		Oroup 2		Oroup 3
Contraction Tops	Parameter	Soln.		Parameter Soin.		Parameter	Soln,
ada manada no						SiP	>
Barch Centrifugation Supernatant Harvest	System Vold Volume		6 Liens	RCF Time Volume Reduction Wesh Volume	10000 X G 30 Minutes 16 X Vol. Reduction 1.5 X System Vold Volume	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP	958 7. Y
Cell Disruption High Press. Homogen.	Product Temperature Utility Temperature Vold Volume	·	8	Number of Passes Pressure Flow Rate Temperature Incresse	6 Times 12,000 PSI 6 LPM 1.8 Degress C/1,000 PSI	Rinse Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP	50% Vold Volumes 95% Y Y Y Y Y Y
Cell Dirrybon Bead Mil	Number of Passes Bead Size Void Volume Flow Rete		2 0.5 LPM			Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP	<b>\$</b> \$6 <b>}</b> <b>}</b>
Cell Disruption Chemical Lysis	Respent Temperature Exposure Tine		0.5 M NBOH 4 G 2 Hours	Lien RespantiGm Product Turation	04 LGm 0 MrLher	Sup Recovery of Product Step Recovery of T.P. Temperature Regulation CIP SIP	#\$\$8 . Y
Microfilvation Tangantial Flow	Porosity Average Flux Rate Total Throughput Fitration Time		0.2 Micron 50 LSFAR at 40 Paig at 4 C 400 Lien-SF 2 HR	Flush Putne Putne Wash Soulds Rogenerate Store	2.00 LSF 2.00 LSF 0.50 LSF 0.30% Of Product Solution 1.00 LSF 2.00 LSF	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP	<b>≴ \$</b> \$58 } ≻ ≻ ≻
Microfilration Dead End	Porosity Average Flux Rate Total Throughbut Flurton Time		0.2 Micron 50 L/SF/HR at 40 Psig at 4 C 400 Uhrr/SF 0.5 HR	Flush Prime Wash Wash Solids Regenerate Store	0 USF 0.5 USF 0.5 USF 0.003 Of Product Solution 1 USF 2 USF	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP	ZZZ S S S S S S S S S S S S S S S S S S
Uirafilration ConcentrationOillution	Perusity Average Flux Rate Concentration Time		60 K NAWA. 3 USFAR at 40 Psig at 4 C 2 HR	Flush Prime Whath Dinde Concentrate Solids Regenerate	2.00 L/SF 0.00 L/SF 10.0 F/SF 10.0 F/SP 10.0 F/SP 1.00 L/SF	Store Step Recovery of Product Step Recovery of T.P. Temperature Reputation CIP	200 USF 85 <b>%</b> 7 7 7
Ultrafiltration Flow Olabysis	Porosity Average Flux Rate Diahysis Time		60 K NAWAL 3 L/SFAR at 40 Psig at 4 C 2 HR	Flush Prime Dialysis Buffer Wash West Regenerate	2 LSF 2.00 LSF 5.0 X Feed Stream Volume 0.50 LSF 0.30% Of Product Solution 1.00 LSF	Store Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP	2002 2003 85\$ 4 4 4 4 7
Prod. Ads. Chromatography HPLC	Column Capacity Column Oversiae Factor Column Aspect Ratio Max. Linear Velocity		10 MO Prod.MI Of Packing 1.5 Fold 0.37 WD 100 CmMr et 45 Pelg and	Coturn Equilbration Coturn Wash Coturn Eute A Coturn Eute B Coturn Repensite Coturn Store	Column Volumes     Column Volumes     Column Volumes     Column Volumes     Column Volumes     Column Volumes     Column Volumes	Prod. Ehdon Volume Step Recovery of Product Step Recovery of T.P. Temperature Requisition CIP	*** **** ***
739 Park Ads Chamatography	Column Capacity	+	10 MG Prod./MI Of Packing	Column Equilibration	5 Column Volumes 3 Column Volumes	Prod. Elution Volume Step Recovery of Product	80%

Column Aspect Raio   Column Cepacity   Column Cepacity   Column Aspect Raio   Column Aspect Raio   Column Aspect Raio   Column Cepacity	Perameter Column Eurle A Column Eurle A Column Reparerate Column Reparerate Column Store Column West Column West Column Mest	Group 2		Cunun
Column Aspect Ratio Max. Linear Velocity Column Overlize Factor Column Overlize Factor Column Overlize Factor Column Capacity Column Capacity Column Capacity Column Aspect Ratio Max. Linear Velocity Column Aspect Ratio Max. Linear Velocity Column Aspect Ratio Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Vold Volume Load Capacity Length Max. Linear Velocity Vold Volume Load Capacity Length Max. Linear Velocity Vold Volume Load Capacity Length Max. Linear Velocity Vold Volume Load Capacity Length Max. Linear Velocity Vold Volume Dilution Factor	Column Eute A Column Eute B Column State B Column State Column State Column State Column State Column Wash Column Pate A			
Column Aspect Ratio Max. Linear Velocity Column Capacity Length Max. Linear Velocity Length Max. Linear Velocity Void Volume Load Capacity Length Max. Linear Velocity Void Volume Dilution Factor	Column Eute A Column Eute Bale Column Regenerate Column Store Column Store Column Wash Column Wash Column Park A	Soln.	Parameter	Sotn.
Column Aspect Ratio Max. Linear Velocity Column Overlize Factor Column Overlize Factor Column Capacity Column Aspect Ratio Max. Linear Velocity Column Aspect Ratio Max. Linear Velocity Column Aspect Ratio Max. Linear Velocity Column Aspect Ratio Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Vold Volume Load Capacity Length Max. Linear Velocity Vold Volume Load Capacity Length Max. Linear Velocity Vold Volume Load Capacity Length Max. Linear Velocity Vold Volume Load Capacity Length Max. Linear Velocity Vold Volume Dilution Factor	Column Exte A Column State Column State Column State Column State Column State Column State Column State Column State Column State Column State Column State Column State Column State Column State Column State Column State	100	Stan Bermany of T.P.	95%
Max. Linear Velodity Column Cepacity Column Oversize Factor Column Oversize Factor Column Oversize Factor Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Aspect Ratio Max. Linear Velocity Load Capacity Loa	Column Bate B Column Regenerate Column Store Column Wash Column Bate A	3 Country Volumes	Temperature Regidation	
Column Capacity Column Oversize Factor Column Oversize Factor Column Oversize Factor Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Aspect Ratio Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length	Column Store Column Equilibration Column Wash Column Bufe A	1 Column Volumes	g	<u>}</u>
Column Cepacity Column Aspect Ratio Max. Unear Velocity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Column Cepacity Length Max. Linear Velocity Max. Linear Velocity Max. Linear Velocity Length Max. Linear Velocity Void Volume Load Cepacity Length Max. Linear Velocity Void Volume Load Cepacity Length Max. Linear Velocity Void Volume Dilution Factor	Column Equilibration Column Wash Column Eute A	2 Column Volumes	Sip	<b>&gt;</b>
St. Chromatography Column Capacity  Golumn Aspect Ratio  Max. Linear Valocity  Golumn Aspect Ratio  Max. Linear Valocity  Golumn Aspect Ratio  Max. Linear Valocity  Golumn Aspect Ratio  Max. Linear Valocity  Golumn Aspect Ratio  Max. Linear Valocity  Golumn Aspect Ratio  Max. Linear Valocity  Golumn Aspect Ratio  Max. Linear Valocity  Column Aspect Ratio  Max. Linear Valocity  Load Capacity	Column Equilibration Column Wash Column Elvie A			707
Column Oversite Factor Column Aspect Ratio Max. Unear Velocity Column Oversite Factor Column Oversite Factor Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Capacity Column Aspect Ratio Max. Unear Velocity Length Max. Linear Velocity Void Volume Load Capacity Length Max. Linear Velocity Void Volume Load Capacity Length Max. Linear Velocity Void Volume Void Volume Void Volume Column Aspect Ratio Max. Linear Velocity Void Volume Load Capacity Length Max. Linear Velocity Void Volume Dilution Factor	Column Bute A	5 Column Volumes	Step Recovery of Product	958
Golumn Aspect Ratio  Max. Unear Velocity  Golumn Overlize Factor Column Aspect Ratio Max. Unear Velocity  Golumn Aspect Ratio Max. Unear Velocity  Golumn Aspect Ratio Max. Unear Velocity  Column Aspect Ratio Max. Unear Velocity  Load Capacity Load Capacity Load Capacity  Load Capacity  Load Capacity  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Dilution Factor	Contraction of the contraction o	3 Column Volumes	Step Recovery of T.P.	#\$8
ds. Chromatography Column Capacity Column Overtize Factor Column Aspeat Ratio Max. Linear Velocity Golumn Aspeat Ratio Max. Linear Velocity Golumn Aspeat Ratio Max. Linear Velocity Column Aspeat Ratio Max. Linear Velocity Column Aspeat Ratio Max. Linear Velocity Lead Capacity Max. Linear Velocity		2 Column Volumes	Temperature Regulation	z
ds. Chromatography Cohumn Capacity Column Overlize Factor Column Aspeat Railo Max. Linear Velocity Column Aspeat Railo Max. Linear Velocity Column Aspeat Railo Max. Linear Velocity Column Aspeat Railo Max. Linear Velocity Column Aspeat Railo Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Length Max. Linear Velocity Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Oblution Factor	Cohumn Recenerate	1 Column Volumes	8	<u>&gt;</u>
ds. Chromatography Column Capacity Column Aspect Ratio Max. Linear Valodity Column Aspect Ratio Max. Linear Valodity Column Aspect Ratio Max. Linear Valodity Column Aspect Ratio Max. Linear Valodity Column Aspect Ratio Max. Linear Valodity Column Aspect Ratio Max. Linear Valodity Column Aspect Ratio Max. Linear Valodity Load Capacity Lo	Column Store	2 Column Volumes	SiP	<u>&gt;</u> _
ds. Chromatography Column Capacity  ds. Chromatography Column Aspect Ratio  Max. Linear Valocity  Golumn Aspect Ratio  Max. Linear Valocity  Column Aspect Ratio  Max. Linear Valocity  Column Aspect Ratio  Max. Linear Valocity  Column Aspect Ratio  Max. Linear Valocity  Void Volume  Used Capacity  Length  Wax. Linear Valocity  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Used Capacity  Length  Max. Linear Valocity  Void Volume  Void Volume  Void Volume  Void Volume  Used Capacity  Length  Max. Linear Valocity  Void Volume  Void Volume  Void Volume  Void Volume	- 1		Company of the Company	424
Column Overlize Factor Column Aspect Radio Max. Unear Valocity Column Aspect Radio Max. Unear Valocity Column Aspect Radio Max. Unear Valocity Column Aspect Radio Max. Unear Valocity Load Capacity Load Capacity Load Capacity Load Capacity Load Capacity Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume	Packing Column Equilibration	5 Column Volumes	Step Recovery of Product	800
Cohumn Aspect Ratio  Max. Unear Valodity  Golumn Capacity  Golumn Aspect Ratio  Max. Unear Valodity  Column Aspect Ratio  Max. Unear Valodity  Column Aspect Ratio  Max. Unear Valodity  Load Capacity  L		3 Cotuno Volumes	Step Recovery of T.P.	#\$8
d. Chromatography Column Capacity Column Overlize Factor Column Aspect Ratio Max. Unear Valocity Column Aspect Ratio Max. Unear Valocity Column Aspect Ratio Max. Unear Valocity Length Max. Linear Valocity Void Volume  d. Chromatography Length Max. Linear Valocity Void Volume  Oliution Factor  Used Capacity Length Max. Linear Valocity Void Volume  Oliution Factor		2 Column Volumes	Temperature Regulation	Z.
d. Chromatography Column Capacity Column Oversize Factor Column Aspect Ratio Max. Linear Valocity Column Aspect Ratio Max. Linear Valocity Load Capacity Loa		1 Column Volumes	8	<u>&gt;</u>
d. Chromatography Column Capacity Column Aspect Ratio Max. Linear Valodhy Column Aspect Ratio Max. Linear Valodhy Column Aspect Ratio Max. Linear Valodhy Load Capacity Void Volume Void Volume Void Volume		2 Column Volumes	dis_	<u>}</u>
di. Chromatography Column Capacity Column Aspeat Ratio Max. Linear Velocity Column Aspeat Ratio Max. Linear Velocity Column Aspeat Ratio Max. Linear Velocity Length Wold Volume  C. Chromatography Leafth Wax. Linear Velocity Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume	- 1	S Contraction	Prod Philips Volume	42%
Column Overlize Fedor Column Aspect Ratio Max, Linear Valocity Column Aspect Ratio Max, Linear Valocity Column Aspect Ratio Max, Linear Valocity Length Max, Linear Valocity Length Max, Linear Valocity Length Max, Linear Valocity Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume	f Packing Column Equilibration	3 Column Volumes	Stap Recovery of Product	*S6
		3 Column Volumes	Step Recovery of T.P.	
ds. Chromatography Column Cepacity Column Aspect Ratio Max. Linear Valochy Max. Linear Valochy Load Cepacity Load Cepacity Load Cepacity Load Capacity Void Yolume Void Yolume Void Yolume	Column Elufe B	2 Column Volumes	Temperature Regulation	z
di. Chromatography Column Capacity Column Aspect Ratio Max. Linear Velocity Load Capacity Length Max. Linear Velocity Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume	Column Regenerate	1 Column Volumes	Cip	<u>- :</u>
di. Chromatography Column Capacity Column Aspect Ratio Max. Linear Valocity Langth Max. Linear Velocity Langth Max. Linear Velocity Langth Max. Linear Velocity Max. Linear Velocity Max. Linear Velocity Max. Linear Velocity Void Volume Void Volume Void Volume  Void Volume  Void Volume	Column Store	2 Column Volumes	Sip	<u>-</u>
di. Chromatography Column Capacity Column Aspect Ratio Max. Linear Velocity di. Chromatography Load Capacity Load Capacity Max. Linear Velocity Max. Linear Velocity Load Capacity Length Max. Linear Velocity Void Volume  di. Chromatography Load Capacity Length Max. Linear Velocity Void Volume  Oilution Factor	- 1		Day Chalso Volume	42% Cotumns Volumes
Cohumn Overlar Factor Cohumn Aspect Ratio Max. Linear Valocity Length Max. Linear Valocity Vold Volume Vold Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume	if Packing Column Equilibration	3 Column Volumes	Step Recovery of Product	95%
Chromatography Load Capacity  C. Chromatography Load Capacity  Vold Volume  C. Chromatography Load Capacity  Load Capacity  Load Capacity  Load Capacity  Load Capacity  Load Capacity  Load Capacity  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume		3 Column Volumes	Step Recovery of T.P.	
Chromatography Load Capacity Langth Max. Linear Velocity Void Volume Langth Max. Linear Velocity Max. Linear Velocity Void Volume Void Volume Void Volume Void Volume  Void Volume  Void Volume  Dilution Factor		2 Column Volumes	Temperature Regulation	z
d. Chromatography Load Capacity Largth Max. Linear Velocity Vold Volume Vold Volume Vodd Volume  d. Chromatography Load Capacity Load Capacity Load Capacity Load Capacity Load Capacity Load Capacity Vold Volume  Dilution Factor		1 Column Volumes	G G	<b>&gt;</b> :
d. Chromatography Load Capacity Load Capacity Load Capacity Load Capacity Load Capacity Load Capacity Load Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume	Column Store	2 Column Volumes	<u> </u>	<u>-</u>
d. Chromatography Load Capacity Langth Max. Linear Valocity Void Volume Void Volume Word Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume		1 Cot mas	Prod Ehdon Volume	42% Columns Volumes
Chromatography Load Capacity  C. Chromatography Load Capacity  Load Capacity  Load Capacity  Void Volume  Void Volume  Void Volume  Void Volume  Void Volume	n Volume Column Equiloration	1 Column Volumes	Step Recovery of Product	85%
vold Volume Vold Volume Vold Volume Vold Volume Vold Volume Vold Volume Vold Volume Vold Volume Vold Volume Vold Volume Vold Volume Vold Volume		1 Column Volumes	Step Recovery of T.P.	
Chromatography Load Capacity Langth Max. Linear Velocity Void Volume  C. Chromatography Load Capacity Load Capacity Load Capacity Max. Linear Velocity Void Volume  Void Volume		2 Column Volumes	Temperature Regulation	<b>z</b> )
Vold Volume Vold Volume C. Chromatography Lead Capacity Length Max. Linear Velocity Void Volume Void Volume Void Volume Void Volume Void Volume			3 6	<u>- &gt;</u>
d. Chromatography Load Capacity Length Max. Linear Velodity Void Volume Void Volume Void Volume Void Volume Void Volume Void Volume	•		5	
C. Chromatography Length Max. Linear Velocity Void Volume C. Chromatography Load Capacity Length Max. Linear Velocity Max. Linear Velocity Void Volume Oliution Factor	ohme	4 Column Volumes	Prod. Elution Volume	42% Columns Volumes
Max. Linear Velocity Void Volume  d. Chromatography Load Capacity Length Max. Linear Velocity Void Volume  Dilution Factor		1 Column Volumes	Step Recovery of Product	95%
Void Volume  Upod Capacity Load Capacity Langth Max. Unear Velocity Void Volume  Dilution Factor	Column Regenerate	1 Column Volumes	Step Recovery of T.P.	
Void Volume  Void Volume  Used Capacity  Length  Max. Linear Velocity  Void Volume  Diution Factor		Z Column Volumes		: >
Void Volume  d. Chromatography Load Capacity Length Max. Linear Velocity Void Volume  Void Volume			\$ 65 E	· <u>&gt;</u>
d. Chromatography Load Capacity Langth Max. Linear Velocity Max. Linear Velocity Vold Volume Dilution Factor		-		
Length Max. Linear Velocity Void Volume  Oliution Factor	n Volume Column Equilibration	4 Column Volumes	Prod. Elution Volume	42% Columns Volumes
Max. Unear Velodity  Vold Volume  Dilution Factor		1 Column Volumes	Step Recovery of T.P.	\$ 50 G
. Void Volume Dilution Factor	Column Regenerate	2 Column Volumes	Temperature Regulation	
Void Volume Däution Factor			GB.	<b>≻</b> ∶
Dilution Factor	-		dis.	<u>}</u>
CHUUDON PACTOR		0,5 Hours	Step Recovery of Product	85%
	Additional Mix Time	\$ Hours	Step Recovery of T.P.	#S8
			0	_>
			CIP CIP	- >-
			dis_	<u>-</u>
Resolubilization Reagent/Product Ratio 0 L/Kg Product	Reagent 1	Water	Step Recovery of Product	95% 95%
	Concentration	Š		
			Temperature Regulation	<b>&gt;- &gt;</b> -
Disablation Time 0.50 Hours		•	S dis	· <b>&gt;</b>

Master Process Parameters Table - Blopharmacoultical

												-														
69		85% 85%	<b>&gt;&gt;</b>	85% 85%	` <b>.</b> .≻. 3	100%		<b>&gt;</b>	95% 95%	<b>&gt;</b> >,>	ç	<u>z</u>	>_		-				-					0.95 95%	<b>&gt;</b> >>	0.95
Ganage	Soln.																									
	Parameter	Step Recovery of Product Step Recovery of T.P.	Temperature Regulation CIP SIP	Step Recovery of Product Step Recovery of T.P.	85	Step Recovery of Product	Step Recovery of T.P.	Temperature Regulation CIP SIP	Step Recovery of Product Step Recovery of T.P.	Temperature Regulation CIP SIP	0	O dio			Amplification Factor				אולחויכפתחו בפרוסו					Step Recovery of Product Step Recovery of T.P.	CIP SIP	Step Recovery of Product
0.3		0.03 U. Process 0.02 U. Process 0.57 U. Brocess		18 Hours ,0.95	-	1 Hours	-			•,		1 HP/100L	1.5 VVM 5 PSIG	21 Hrs	2% FBS	2 Days	2 Days	202 77	1 Feed nervesses ner	2 Days	r Copy					50% Hours
Group 2	Soln.										1							1				1		 -		$\dagger$
	Parameter	Titration Solution -1 Titration Solution -2 Neutralization	• :	Lyophilization Time Product Weight Reduction		Exposure Time					Temoretica	Agitation	Sparge Rate Back Pressure	Total Duration	Serum Content Food Rate		Days to Confluence		Feed Rate		Cays to Connuence					Exposure Time
		yme Stock Per Proc. Vol.	37 Degrees C 30 Minutes 100%	8 Units 100 Grams/Unit		98.6 Degrees C	34. Degrees C	S Degrees C 38.6 K BTUM!						5 MVL 5 MVL	12 Uters	5 Gm/Uter	2 - 2	282		5 Gm/Liter	2 FBS					37 Degrees C
Group 1	Soln.				<del></del>		•				1							1					<del></del> -	 -		$\dagger$
	Parameter	Enzyme to Product Retio	Reaction Temp. Reaction Duration	Product Capacity/Load Product Unit Size		Process tritlal Temp.	Utility Initial Temp	Utility Final Temp. Process Specific Heat Design Type (P.T.C)			Cia Q cil elect	Fermentor Working Volume	Antifoam A Antifoam B	Base	Flask Feed Volume Soloner Solit Ratio	uCarrier Density	Number of PBS Weshs Number of Media Washs No of Media/Sepim Weshs	No. of media Seroin washis	Spinner Split Batio	uCarder Density	Number of Media Washs No. of Media/Serum Washs					Process Initial Temp.
	Unit Operation Type	749 Enzymatic Modification		150. Lyophilization	·	T51 Heat Exchange			152 Storage		TC1 Commentation	Seed			54 Initial Seeding			Olympia Volentia				56 Culture Flask Split		 57 Sured Tank Reactor		58 Fluidized Bed Reactor

AG

		Group	10		-6 -	dentity that they have the tend that they then the time the	J. II.	g	Group 3
Unit Operation Type	Parameter	Soln.		Parameter	Sofn.		Parameter	Sofn.	
							Tolerand Contraction		>
	Utility Final Tamp. Process Specific Heat Design Type (P.T.C)		5 Degrees C 12 K BTUMr P						- >- >-
S9 Liquid/Liquid Extraction	Liquidul Ratio Extraction I emperature Addition Duration Addition Bix Duration Mix Energy		1 L Extraction/L Product 4 C 0.5 Hours 4 Hours 0.3 HP/100 L	Phase Separation Time Product Phase (Top/Bottom) Harvest Time		1800% Hours Top 0.5 Hours	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP SIP		8 % 80 % >->->-
60 Solia/Lquid Extraction	Uquioriquid Rasio Extraction Temperature Duration Mix Energy		1 L Extraction L Product 4 Hours 0.3 HP/100 L	Phase Separation Time Product Phase (Top/Bottom) Harvest Time	_	1800% Hours Top 0.5 Hours	Step Recovery of Product Step Recovery of T.P. Temperature Regulation CIP		80 <b>*</b>